QK180
.E64
1941a
V.4 826

Tribe Heleniеae.

Herbs with alternate leaves, decurrent upon the stem in Helenium, pinnatifid in Eriophyllum. Heads showy, with yellow ray-flowers, the disc flowers yellow or purplish. Bracts of the involucre in 1-3 series. Receptacles naked or bearing awl-like awns. Achenes glabrous in Eriophyllum, for the rest hispid, the pappus of several membranous scales which taper into a thin awn in Helenium and Gaillardia.

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34. Helenium L. Sneezeweed.

Perennial herbs with alternate leaves the upper of which are sessile and decurrent upon the stem. Heads showy, hemispherical or nearly globose, their involucres consisting of 2 or 3 series of linear-lanceolate bracts, the outer of which are herbaceous, the inner shorter and membranous, reflexed in fruit; ~~the~~ receptacles subglobose, naked. Ray-flowers yellow, fertile, their corollas wedge-shaped, 3-4-toothed; disc-flowers yellow, compact. Achenes narrowly cuneiform, 4-5-angled, longitudinally ribbed, the ribs hispid; pappus of 4-8 membranous scales which taper into a membranous awn.

1. H. montanum Nutt. → Erect leafy ~~perennial~~ herbs 15-60 cm. tall, the basal leaves narrowly oblanceolate, 2-4 cm. long, tapering to an indefinite petiole, soon withering, the upper leaves broadly elliptical or obovate, acute, ~~sessile and~~ decurrent ~~upon the stem~~ the length of the internodes, thus forming narrow wings upon the stem, remotely and shallowly toothed, both surfaces glabrous, sprinkled with obscure sessile glands; heads more or less corymbose, on rough peduncles 2-8 cm. long, soon becoming globose, their involucral bracts ← ~~involucres consisting of 2-3 series of~~ linear-lanceolate or subulate, very acute ~~bracts~~, the outer ~~of which are~~ 6-8 mm. long; ray-corollas bright golden-yellow, 12-18 mm. long, cuneiform, 3-4-toothed or lobed, glandular and puberulent on the lower surface; disc-corollas yellow; achenes 2 mm. long, glandular with sessile glands, hispid on the ribs, pappus-scales somewhat shorter than the body of the achene, more or less lacerate.

Occasional in moist earth along slow streams or lakes. →

Nott → Sandpoint, Epling 10403; Pearl Isl., Dunkle; Fort Hill, Epling 10483.

35. Eriophyllum Lag. Golden Yarrow

Perennial herbs, woody and branched at the base with alternate, densely white-woolly pinnatifid leaves. Heads few on rather stout peduncles which are gradually dilated upwards, their involucres hemispherical or campanulate, consisting of a single series of rather rigid oblong-lanceolate woolly bracts; receptacle conical, naked. Ray-flowers pistillate and fertile, yellow; disc-flowers yellow. Achenes prismatic, strongly 4-angled, bearing a white pappus of irregular chaffy scales.

1. E. lanatum (Pursh) Forbes. Perennial herbs branching at the base with several ascending or decumbent stems, 20-40 cm. tall, densely white-woolly throughout, leaves numerous, 1-5 cm. long, ovate or obovate in outline, pinnately 3-5-toothed or lobed, narrowed to an indefinite petiole, densely white-woolly, becoming less so and ashy in age; heads hemispheric on woolly peduncles 5-10 cm. long, their involucral bracts 8-12, strongly overlapping, 8-9 mm. tall, firm, oblong, or oblong-lanceolate, subacute, woolly on the outer surface, glabrous within; ray-flowers 6-12, golden-yellow, their corollas 8-12 mm. long; achenes 3.5 mm. long, .5-.6 mm. wide, the pappus scales variable but generally scarcely .5mm. tall.

Frequent in rock-crevices or dry rocky soil at low elevations.

var. integrifolium (Hook.) Smiley. Stems usually lower, 10-20 cm. tall, sparingly branched; heads campanulate, 6-8 mm. high, their bracts 6-8, chartaceous, little overlapping, carinate. —

no ff → Occasional over the southern part of our area; ~~this var.~~ often ~~not well~~ ill defined in our region, ~~and intermediate~~ plants occasional.

Tribe Anthemideae .

Perennial herbs with alternate, mostly pinnatifid leaves, toothed or entire in some species of Artemisia and Chrysanthemum. Heads mostly small, compact, the ray-flowers showy and white or yellow and inconspicuous or wanting. Bracts overlapping in several series, firm and chaffy, usually with thin margins. Receptacles chaffy in ~~Achillea~~ and Anthemis, for the rest naked. Pappus none or a low ridge or crown, in Tanacetum and Matricaria.

Achillea

36. Anthemis L. Chamomile.

Annual herbs with numerous alternate finely dissected leaves. Heads radiate, their involucres hemispherical, consisting of several series of scarious bracts, the receptacles conical. Ray-corollas white, sterile or pistillate, disc-corollas yellow, some if not all subtended by a chaffy subulate bract. Achenes narrowly wedge-shaped, longitudinally ribbed and more or less tuberculate; pappus none.

o Herbage ill-scented; ray flowers sterile; leaves
4 prevailingly thrice pinnatifid — 1. A. Cotula

o Herbage not ill-scented; ray flowers fertile; leaves
4 prevailingly twice pinnatifid — 2. A. arvensis

1. A. Cotula L. Dog-fennel. → An annual, 20-60 cm. tall with ill-scented pungent foliage, the leaves glabrous or nearly so, 3-5 cm. long, prevailingly 3 times pinnately dissected into threadlike lobes; bracts of the involucre oblong, obtuse; ray-flowers 8-10 mm. long, sterile.

Frequent in pastures or around habitations; introduced from Europe.

2. A. arvensis L. Corn Chamomile. → An annual, ~~hor~~ 30-50 cm. tall, with thinly pubescent foliage, not ill-scented, the leaves prevailingly twice pinnatifid into linear lobes, 3-5 cm. long; bracts of the involucre oblong, obtuse, 5 mm. long; ray-flowers 9-10 mm. long.

To be expected as a weed in waste places.

37. Achillea L. Yarrow. Milfoil.

Perennial herbs with alternate pinnatifid leaves with numerous small linear segments. Head numerous, mostly radiate. Involucres mostly ovoid, consisting of several series of membranous bracts with prominent midveins and scarious margins, passing into the smaller and thinner bracts of the disc. Ray-flowers few, commonly 5, sometimes wanting, pistillate, fertile, their corollas commonly white sometimes pinkish; disc corollas whitish. Achenes oblong or ovate, strongly flattened, bearing a callous margin; pappus none.

1. A. millefolium L. var. lanulosa (Nutt.) Piper. ——→

Cap. ~~A perennial~~ herb with usually tufted stems 30-60 cm. tall, thinly pubescent with fine shaggy hairs, especially so at the nodes; leaves narrowly oblong-oblanceolate, 5-15 cm. long, pinnately divided into numerous segments, these again once or twice pinnatifid or toothed, the ultimate segments 1-2 mm. long, scarcely .5 mm. wide, acute, thinly woolly throughout with fine hairs, the lower leaves borne on short dilated petioles, the upper sessile or nearly so, heads numerous in flat-topped or convex terminal clusters, their involucres 3-5 mm. tall, mostly ovoid, the bracts green, thinly woolly and sometimes with sessile glands, ~~with a prominent midrib, the margins scarious~~→ brownish; ray-flowers mostly 5, their corollas dull white, or rarely pinkish, 3-4 mm. long, the blades subrotund, entire or toothed, spreading; achenes 2 mm. long.

Abundant at all elevations in open places.

38. Chrysanthemum. (Tourn.)L.

Perennial herbs with rootstocks and alternate leaves pinnately incised or pinnate, the terminal lobe being very much larger than the lateral ones, these sometimes wanting. Heads with or without ray flowers which are white when present. Involucres hemispherical, of several series of mostly oblong bracts which are overlapping and scarious at the tips; receptacle naked, flat or convex. Disc-flowers yellow. Achenes cylindrical, ribbed longitudinally; pappus none.

o Ray flowers present, ~~which are~~ 20-25 mm. long — 1. C. Leucanthemum

o Ray flowers wanting — 2. C. Balsamita

1. C. Leucanthemum L. var. pinnatifidum Lecoq & Lamotte. Ox-eye Daisy. Perennial herbs, the stems several, 30-60 cm. tall, erect, glabrous; basal leaves mostly spatulate, attenuate to a slender petiole 3-4 cm. long, irregularly toothed, the cauline leaves oblong or the lower oblanceolate, 3-5 cm. long, sessile, pinnately incised or pinnatifid, the lobes acute, both surfaces glabrous; heads showy, solitary at the ends of the stems, their involucres hemispheric, depressed around the stem, the bracts 3-7 mm. long, in 4-5 series, the outer lanceolate, acute, the inner oblong, scarious margined above the middle, all margined with brown; ray-corollas 20-22 mm. long, white, 20-30 in number; disc flowers yellow; achenes ribbed.

Occasional in moist ground usually near habitations; introduced from Europe. →

mH → Priest R. Exp. Sta., Epling 6602.

2. C. Balsamita L. var. tanacetoides Boiss. Perennial herbs with stems 60-80 cm. tall, puberulent; basal leaves oblanceolate or elliptical, long-petioled, the stem-leaves oblong or oval, their blades 4-8 cm. long, bearing 2 or 4 small lateral lobes or teeth at the base, the lower on petioles 1-1.5 cm. long, the upper sessile, all crenately toothed, the teeth 1-1.5 mm. tall, both surfaces dull and somewhat canescent with small appressed hairs; heads numerous, rayless, arranged in terminal flat-topped clusters, their involucres hemispherical, the bracts in about 4 series, oblong, 3-4 mm. long, the tips scarious; disc-flowers subequal to the bracts, yellow.

An occasional escape at lower elevations; introduced from Asia. →

mH → Clarkia, Epling and Offord 8775.

39. Tanacetum (Tourn.)L.

Stout aromatic, very leafy perennial herbs with alternate 1-3 times pinnatifid leaves. Heads numerous, hemispherical, arranged in flat-topped clusters, radiate, but appearing discoid due to smallness of the ray flowers. Involucre cup-shaped, formed of numerous closely overlapping narrow bracts; receptacle convex, naked. Ray flowers pistillate, fertile, yellow; disc flowers yellow, Achenes sub-prismatic, ribbed; pappus forming a low chaffy crown.

1. T. vulgare L. Tansy. Strong-smelling, ~~herb~~ 80-100 cm. tall or more, glabrous; leaves mostly twice pinnatifid, the ultimate segments acute, frequently sharply toothed; clusters 10-12 cm. across, the bracts of the involucre 2-3 mm. long; flowers yellow.

Escaped from gardens or introduced as a weed in waste places. ⟶

no H ⟶ Priest River, Epling 7988.

40. Matricaria (Tourn.)L.

Annual weedy herbs with alternate leaves thrice pinnatifid into small linear divisions. Heads numerous, discoid, ovoid or subglobose, compact, their involucres formed of about 3 series of oblong membranous bracts with scarious margins; receptacles conical, naked. Flowers greenish yellow. Achenes clavate, curving somewhat, 3-ribbed; pappus a low ridge around the apex.

Pineapple Weed.

1. M. suaveolens (Pursh) Buch. Wild Chamomile. Glabrous annual herbs 10-30 cm. tall, with fragrant foliage; leaves 1-3 cm. long, thrice pinnatifid, the ultimate segments scarcely 1 mm. wide or less; heads 3-6 mm. in diameter, the bracts of the involucre 3 mm. long; achenes 1.3 mm. long. (M. matricarioides Porter.).

A frequent weed in waste places around stables and dwellings and in pastures.

41. Artemisia L. Sagebrush.

Perennial herbs with ascending usually numerous stems and usually hoary foliage; leaves alternate, entire, pinnately toothed or dissected, variable. Heads small, often greenish, not showy except in mass, subglobose, borne in racemes or panicles; bracts of involucre closely overlapping, in 2-4 series, more or less scarious; receptacle flat, rounded or rarely ovoid, usually naked. Flowers yellow or brown, the marginal ones unisexual, pistillate, usually functioning as ray-flowers. Achenes obovoid-columnar, without a pappus, usually glabrous.

o Herbage entirely glabrous

2 Leaves entire, 1.5-3 mm. wide — 1. A. dracunculoides

2 Leaves once or twice pinnatifid — 2. A. biennis

o Herbage pubescent, either silky or woolly

2 Herbage thinly clothed with soft fine hairs

4 Heads 3.5-4 mm. in diameter — 3. A. spithamea

4 Heads 2.5-3 mm. in diameter — 4. A. pacifica

2 Herbage more or less woolly or cobwebby beneath

4 Receptacle hairy; plant a shrub — 5. A. absinthium

4 Receptacle naked; plant an herb, perhaps 8 thickenod, but not decidedly woody at base — 6. A. vulgaris

1. A. dracunculoides Pursh. → An erect perennial 40-120 cm. tall, the branches erect, slender, glabrous; leaves linear-lanceolate, acute, sessile, entire, glabrous, 1-2.5 cm. long, 1.5-3 mm. broad, 2-2.5 mm. broad, numerous; heads numerous, nodding, in greenish panicles, the short branches ~~of which are~~ → ascending or extended; bracts of the involucre in usually 4 series, the outermost subulate, rather fleshy, the inner broadly ovate or oval, scarious, with brownish midveins, all glabrous; flowers yellowish. → North → (A. dracunculus subsp. glauca Hall, & Clem.).

Seen only in the Kootenai Valley near Bonner's Ferry, Epling 10446.

2. A. biennis Willd. → A biennial herb 30-60 cm. tall with simple glabrous very leafy stems; leaves 5-8 cm. long, prevailingly ovate in outline, for the most part twice-pinnately dissected, the primary subdivisions mostly linear-oblanceolate, the secondary lobes 1-5 mm. long or merely teeth, acute, spreading, both surfaces glabrous; ~~the~~ upper leaves once pinnate, with entire segments; heads numerous, borne on short lateral branchlets in the upper axils, much exceeded by the subtending leaves, their involucres 1-1.5 mm. tall, the bracts scarious-margined, glabrous, the receptacles flat, naked; flowers yellow, glabrous; achenes not seen.

Port Hill, Epling 10503; Horse Plains, ~~[illegible]~~ 2100 ft, Leiberg 1590.

Moist places.

3. A. spithamea Pursh. → Low perennial herbs with elongate tap roots and stout branching vertical caudices, the basal leaves tufted, 10-18 cm. long, for the most part twice pinnately divided into linear segments 1-2 cm. long, 1-2 mm. wide, attenuate to linear petioles 8-12 cm. long, the cauline leaves similar, shorter petioled, the uppermost sessile, once pinnate, passing into the linear bracts all thinly silky-pubescent; stems 20-40 cm. tall, thinly silky-pubescent with fine hairs; ~~heads in~~ narrow racemes or slender panicles 1.5-2 cm. broad, the branches ~~of which are~~ erect and very slender; heads 2.5-3 mm. in diameter. → (A. campestris subsp. pacifica Hall & Clem.).

Infrequent in sandy soil at low elevations. →

not H → Upper Priest R., 3000 ft., Epling 7553, 7512, 7586, ~~Horse Plains, 540 ft., Leiberg 1580~~.

4. A. pacifica Nutt. → Perennial herbs with stems 40-60 cm. tall, erect, branching in the inflorescence, the branches strongly ascending; leaves twice pinnately divided into linear segments 1-2 cm. long, 1-2 mm. wide, attenuate to linear petioles 8-12 cm. long, the stem leaves similar, more shortly petioled, the uppermost sessile, once pinnate, passing into the linear bracts, all pubescent with soft short appressed hairs but hardly silky; ~~heads in~~ panicles 5-10 cm. broad, with strongly ascending branches; heads 3.5-4 mm. in diameter. → (A. campestris subsp. pacifica Hall & Clem.).

Near Horse Plains, Leiberg 1580.

Open plains.

5. Absinthe.

A. absinthium L. → A somewhat shrubby perennial with usually numerous stems 50-100 cm. tall, more or less canescent with fine appressed hairs; leaves broadly ovate in outline, twice or thrice dissected into linear-lanceolate lobes 1-3 mm. broad, mostly obtuse, more or less canescent on both surfaces, especially beneath; heads numerous in compound panicles; bracts of the involucre in usually 4 series, the outermost subulate, the inner broadly oval, with broad scarious margins, thinly pubescent, the receptacles hairy; flowers numerous, crowded, yellow. =/

Frequent in waste places and along roadways in dry situations at low elevations.

A. Douglasiana Besser (A. heterophylla Nutt.)

585

6. A. vulgaris L. → Perennial herbs with rootstocks, most variable in habit, the stems 20-100 cm. tall, usually white-woolly, sometimes becoming glabrous; leaves of great variability, entire and elliptical or lanceolate, 3-8 cm. long, 5-20 mm. broad, or pinnatifid, more or less ovate or obovate or oblanceolate in outline, 3-10 cm. long, the lobes spreading, 1-10 mm. broad, or sometimes merely toothed, both surfaces usually woolly or cobwebby; the upper sometimes becoming glabrous; heads crowded into narrow usually leafy panicles 15-30 cm. long; 3-4.5 mm. in diameter.

Frequent in restricted dry situations where plants from the sagebrush regions sometimes penetrate. Our plants comprise chiefly 3 ~~forms~~ subspecies; one known as ~~A. heterophylla Nutt.~~ with leaves usually obovate in outline, 2-5 cm. wide, with spreading lobes; one known as A. gnaphalodes Nutt. with mostly entire elliptical or lanceolate leaves .5-2 cm. wide, which are tomentose on both surfaces; and A. ludoviciana Nutt. in which the leaves are linear or linear-oblanceolate, .5-2 cm. wide with leaves mostly cut into linear-lanceolate, spreading lobes, usually gray and woolly on both surfaces. =/

Tribe Senecioneae.

Herbs with chiefly basal leaves in Petasites, opposite stem leaves in Arnica and alternate stem leaves in Senecio. Bracts herbaceous, in 1-3 series, often keeled in Senecio. Ray flowers usually present. Pappus of soft bristles.

42. Petasites L.

Perennial herbs with stout creeping rootstocks and basal very large leaves which mature after the scape-like flowering stems. Heads approximately dioecious, the involucres narrowly campanulate, their herbaceous ~~in a single series~~; flowers of the pistillate plants mostly fertile, their corollas irregularly 2-5 toothed and tubular or strap-shaped; flowers of the sterile plants mostly perfect but functionally sterile, the sterile flowers tubular and 5-toothed. Achenes 5-10-ribbed; pappus of copious soft bristles.

1. P. sagittata (Pursh)Gray. Colt's Foot. ~~Perennial~~ herbs with elongated ~~creeping~~ jointed rootstocks and basal leaves ~~which develop after the flowering stalk is formed~~, the blades being at maturity deltoid, 20-30 cm. long, somewhat narrower, sinuately and coarsely toothed, borne on petioles as long as the blade or longer, both surfaces white and felt-like when young, the upper becoming glabrous and green; flowering stems 30-50 cm. tall, bearing several sessile lanceolate scales which pass into the bracts of the flower cluster, thinly cobwebby; heads 10-15 in a loose convex cluster on petioles 1-2 cm. long, involucral bracts in 2 series, membranous, oblong-lanceolate, obtuse, 6-7 mm. tall; ray corollas violet, slightly longer than the bracts.

In swampy places at low elevations forming frequently considerable areas; flowers very early.

Port Hill, Epling 10496.

43. Senecio L.

Perennial herbs with horizontal rootstocks, the stems erect, the basal leaves commonly long-petioled, the upper stem leaves being much reduced, sessile and of different form, less often similar but smaller, always alternate. Heads rarely solitary, commonly in terminal subumbellate and crowded or more open corymbs, their involucral bracts subequal, erect, commonly in one, sometimes 2 dissimilar series; receptacle flat, naked. Flowers yellow, the ray flowers few, irregular in number, lax, often wanting, pistillate and fertile when present. Achenes columnar, 5-10 ribbed, bearing a copious soft white pappus. =1

O Heads mostly solitary, rarely more than 3

2 Bracts 14-15 mm. long, in two dissimilar series — 1. S. megacephalus

2 Bracts 5-6 mm. long, in a single series — 2. S. subnudus

O Heads few to numerous, arranged in corymbs

2 Stem leaves differing in shape from the basal leaves, markedly smaller,
6 < basal leaves ovate to lanceolate, cordate or narrowed at the base

4 Basal leaves rounded and usually subcordate

8 at the base

6 Stem leaves pinnatifid

3. S. pseudaureus

6 Stem leaves toothed or subentire

4. S. integerrimus

4 Basal leaves attenuate at the base ~~(see third category)~~

6 Basal leaves glabrate or loosely woolly, their

10 blades 4-15 cm. long

8 Cauline leaves glabrous-margined;

12 < heads in elongate corymbs, the lowermost branches of which are 10-20 cm. long

10 Leaves sharply denticulate

5. S. exaltatus

10 Leaves prevailingly entire

6. S. pacificus

8 Cauline leaves woolly-margined; heads

12 < in compact subumbellate corymbs the branches of which are rarely more than 5 cm. long.

7. S. columbianus

6 Basal leaves covered at least below with a fine close

10 felt, 1.5-3 cm. long, on slender petioles usually longer

8. S. Howellii

2 Stem leaves similar to the lower leaves, gradually diminished upward, all truncate or sagittate at the base

9. S. triangularis

1. S. megacephalus Nutt. ⟶ Stems 40-80 cm. tall, more or less floccose-woolly; leaves chiefly in basal tufts, 10-20 cm. long, 8-25 mm. wide, narrowly oblanceolate, obtuse or acute, entire, floccose-woolly or cobwebby, the stem leaves similar but smaller, sessile, the upper ones lanceolate or linear and acute; heads 1-3, 3.5-5 cm. broad, including the spreading ray-flowers, the involucres hemispherical, their bracts of 2 dissimilar series, the outer linear, woolly, herbaceous, 14-15 mm. long, the inner subequal, boat-shaped, firm and somewhat chaffy, woolly towards the apex; ray flowers 20-25 mm. long; achenes not seen.

Frequent in subalpine meadows.

2. S. subnudus DC. ⟶ Glabrous herbs, the stems very slender, 10-40 cm. tall; leaves chiefly basal, few or tufted, their blades oval or obovate, 8-25 mm. long, rather coarsely dentate, entire towards the base and somewhat cuneate or abruptly narrowed to slender petioles 3-5 cm. long; lowermost stem leaves smaller and more sharply toothed, the remainder 5-15 mm. long, subulate, entire, or sparingly toothed; heads usually solitary, terminal, their involucral bracts 5-6 mm. long, linear, glabrous; ray-corollas 8 mm. long; achenes glabrous.

Meadow near Oxford R. S. 5000 ft., Epling and Houck 9690; ridges south from Wiessner's Peak, 6200 ft., Leiberg 1376.

3. S. pseudaureus Rydb. ~~Perennial herbs with horizontal root-stocks, their~~ stems erect, glabrous below, somewhat pubescent with slender hairs in the inflorescence, 60-90 cm. tall; blades of the basal leaves oval, or ovate, even subrotund, 2.5-5 cm. long, abruptly narrowed to slender petioles 5-20 cm. long, mostly woolly on the expanded bases, obtuse or rounded at the apex, subcordate or subtruncate at the base, their margins crenate or serrate, the lower stem leaves ~~similar but~~ more elongate, prevailingly oblong-ovate, or oval, irregularly bisdentate or sometimes incised toward the base, the petioles shorter, these passing into the upper sessile and clasping deeply incised or pinnatifid leaves which are oblong or the uppermost lanceolate, the lobes remote, again usually irregularly toothed; heads in terminal flat-topped subumbellate clusters, their involucral bracts 5-8 mm. long, linear, sparsely pubescent; ray-corollas 9-10 mm. long; achenes 2.5 mm. long. (S. idahoensis Rydb.).

Cap.

Frequent in meadows or burns below 5000 feet.

4. S. integerrimus Nutt. Basal leaves ovate, rounded at the base, 3-5 cm. broad; stem leaves entire, lanceolate; corymbs thinly woolly.

Continental Mt., Christ 1670.

5. S. exaltatus Nutt. → Herbs 60-120 cm. tall, prevailingly glabrous throughout, basal leaves mostly elliptical or oblanceolate, 6-15 cm. long, obtuse or acute, tapering at the base to petioles as long as the blade or longer, rarely somewhat abruptly narrowed, the margins sharply denticulate, the upper leaves sessile and clasping, lanceolate, widest at the base and acute or attenuate at the apex, 1.5-6 cm. long, 3-12 mm. wide; heads displayed in rather flat-topped corymbose clusters, the lower branches of which are 6-15 cm. long, each branch bearing a small umbellate cluster at its apex; involucral bracts 5-8 mm. tall, narrowly oblong, keeled on the back, rather abruptly narrowed toward the apex and there acute, tipped with purple; ray-flowers 9-12 mm. long; achenes 4-5 mm. long, glabrous.

In meadows and on open hillsides.

S. Leibergii Greene is a form very similar but with pale yellow rays.

6. S. pacificus Greene. ——→ Rather coarse herbs often growing in water, with short vertical rootstocks and fleshy roots; stems 60-80 cm. tall, glabrous and glaucous; basal leaves varying from linear, when partly submerged, 5-10 mm. wide, to oblanceolate, the blades 15-25 cm. long, tapering to a petiole of equal length; stem leaves gradually diminished upwards, the lower oblanceolate, narrowed to broad-winged petioles, the upper oblong-lanceolate, broadest at the clasping base, all entire, smooth and rather glaucous; heads all discoid, in terminal flat-topped corymbs 5-10 cm. across; involucral bracts 7-8 mm. long, the inner 2 mm. broad with thin margins, all glabrous, hardly black tipped, disc-corollas 7 mm. long; achenes glabrous.

Infrequent in marshy ground at low elevations. ——————————→

NOH ——→ Lower valley of Clark Fork, 2100 ft., Leiberg 1665; Pearl Island near Hope, Dunkle; Sandpoint, Christ 2029.

7. S. columbianus Greene. ~~Perennial~~ herbs with ~~horizontal rootstock~~ stout roots, their stems 30-60 cm. tall, sparingly floccose-woolly or nearly glabrous; basal leaves few, their blades 4-8 cm. long, prevailingly oval, mostly obtuse, rather abruptly narrowed to stoutish often floccose petioles ~~for the most part about as long as the blade~~, their margins irregularly denticulate, both surfaces or only the lower sparsely floccose-woolly, both sometimes glabrate, the lower stem leaves similar but smaller, quickly passing into much reduced linear-lanceolate or subulate bract-like leaves 1.5-4 cm. long, 2-5 mm. wide, broadest at the clasping base, the lowermost usually denticulate, the uppermost entire, attenuate, all prevailingly woolly; heads displayed in subumbellate convex clusters the lowermost branches of which are 1-3 rarely 4 cm. long; involucral bracts 5-7 mm. long, narrowly oblong, keeled on the back, rather abruptly narrowed toward the apex and there acute, tipped with purple; ray flowers 9-12 mm. long; achenes 4-5 mm. long, sparsely hirtellous. =1 (S. atriapiculatus Rydb.).

Open hillsides from 2500-6000 feet.

8. S. Howellii Greene. → Tufted herbs 20-30 cm. tall with several stems, white-woolly throughout with a fine felt-like tomentum; basal leaves oval, on slender petioles 3-4 cm. long, mostly entire; stem leaves sessile, becoming lanceolate in the upper parts; heads 7-8 mm. tall, golden yellow.

Rathdrum prairie, Christ 290.

9. S. triangularis Hook. → Erect ~~perennial~~ glabrous herbs ~~with horizontal rootstock~~, the stems 60-100 cm. tall or more, leafy throughout; leaves deltoid-ovate, frequently somewhat hastate, their blades 4-12 cm. long, mostly short-acuminate, cordate or subtruncate at the base, both surfaces glabrous, the margins sharply and closely toothed, the teeth 1-3 mm. tall, more or less deltoid, the lowermost on petioles 3-8 cm. long, the uppermost nearly sessile; heads few, displayed in more or less flat-topped or convex terminal clusters; involucres bell-shaped, their bracts 6-9 mm. long, linear or linear-lanceolate, rather blunt and pubescent at the tips, for the rest, glabrous; ray-corollas 14-15 mm. long; achenes 4 mm. long, the white pappus 6-7 mm. long.

Common in boggy moist places in the woods at lower elevations and in subalpine meadows.

44. Arnica L.

Perennial herbs with creeping, often elongate rootstocks, the basal leaves usually differing from the cauline, the latter diminished upwards, opposite, the lower pairs resembling the basal leaves, being thus either cordate or narrowed at the base, the uppermost pairs sessile. Heads solitary or several, the involucres top-shaped or hemispherical, their bracts thin and membranous, in 1 or 2 series, erect. Receptacle flat or convex, naked or pubescent. Ray-flowers pistillate and fertile, the rays conspicuous, yellow; disc-flowers numerous, their tubes pubescent. Achenes columnar, rarely glabrous, mostly either hispidulous or sprinkled with short glandular hairs. Pappus a single series of scabrous bristles.

o Lower leaves oblanceolate or obovate, narrowed toward the 4 base

2 Achenes sprinkled with minute glands or resin dots, 6 sometimes with scattering short hairs

4 Stem and leaves glabrate, glandular puberulent, 8 < the latter linear-lanceolate, seldom more than 1.5 cm. wide — 1. A. longifolia

4 Stem and leaves short-woolly, the latter 1.5-2.5 cm. 8 wide, oblong-lanceolate or oblong

6 Involucral bracts 1.5-3 mm. wide, 10-12 10 mm. long — 2. A. mollis

6 Involucral bracts 1-2 mm. wide, 6-8 mm. long — 3. A. Chamissonis

2 Achenes hispidulous or hirsute, or glabrous, not 6 at all glandular

4 Achenes glabrous — 4. A. crassa

4 Achenes hispidulous or hirsute

6 Ray-corollas orange; achenes softly hirsute, 10 plants 10-20 cm. tall — 5. A. Rydbergii

6 Ray-corollas yellow; achenes hispidulous, 10 plants 30-50 cm. tall, rarely less

8 Leaves entire or nearly so; heads 12 solitary — 6. A. pedunculata

8 Leaves sharply toothed, heads several, 12 rarely solitary — 7. A. Macounii

o Basal leaves and often the lower stem leaves cordate 4 or reniform

4 Achenes glabrous — 8. A. latifolia

4 Achenes hispidulous

Bracts of involucre ~~Involucral bracts~~ 8-12 mm. long, ray-corollas 12-20 mm. long

b Plants glabrous or nearly so, ray-corollas 10 corollas 12-15 mm. long — 9. A. diversifolia

b Plants thinly woolly; ray-corollas 10 18-20 mm. long — 10. A. gracilis

f Bracts of involucre 15-20 mm. long; ray-corollas 8 corollas 25-35 mm. long — 11. A. cordifolia

1. A. longifolia D.C. Eaton. ~~A perennial~~ herbs with a rather woody horizontal rootstock, the stems several, 40-60 cm. tall, glandular puberulent; basal leaves narrowly obovate or spatulate, 3-5 cm. long, the cauline several pairs, linear-lanceolate, 5-9 cm. long, 6-10 mm. wide, acute or acuminate, narrowed toward the base, subentire or finely denticulate, glabrate or glandular-puberulent beneath; heads several, their involucres hemispherical, the bracts oblong, acuminate toward the apex, 8-10 mm. long, glandular; ray corollas yellow, 12-14 mm. long, disc-corollas 6 mm. long; achenes glandular with almost sessile glands, pappus rather tawny.

Lake Coeur d'Alene, Epling and Houck 10151.

2. A. mollis Hook. ~~Perennial~~ herbs 30-40 cm. tall, their stems thinly woolly with glandular hairs; basal leaves obovate or oblanceolate, 5-8 cm. long, subentire, blunt, narrowed below the middle but sessile, stem leaves 3-4 pairs, elliptical-oblong, 4-6 cm. long, the lower narrowed below the middle, the upper more or less rounded at the base and somewhat clasping, all subentire or the upper denticulate, thinly glandular-woolly; heads commonly solitary, their involucres hemispherical, the bracts oblong-lanceolate, 12-13 mm. long, acute, often reddish, thinly glandular-woolly, more densely so towards the base; ray corollas oblong-elliptical, 17-18 mm. long, rounded and tridentate at the apex, disc corollas 6.5-7 mm. long; achenes 4.5-5 mm. long, thinly glandular with stalked glands, the pappus somewhat tawny.

Cap.

Seen only in a subalpine meadow at Fish Lake, 6000 ft., Epling and Houck 9616.

3. A. Chamissonis Less. → Perennial herbs 40-60 cm. tall, the stems woolly with soft fine hairs; basal leaves oblanceolate or spatulate, their blades 3-5 cm. long; cauline leaves in several pairs, elliptical-lanceolate or ligulate, 6-10 cm. long, 1-2.5 cm. wide, acute, the lower narrowed to indefinite petioles, the upper rounded or truncate and somewhat clasping, all entire or nearly so, woolly-pubescent and glandular with sessile glands; heads several in irregular corymbs, the peduncles 3-6 cm. long; involucres sub-hemispherical, the bracts elliptical-oblanceolate, 8-10 mm. long, acute, thinly woolly; ray corollas yellow, oblong-elliptical, bidentate or entire at the apex, 15-16 mm. long; disc-corollas 6 mm. long; achenes thinly hispidulous and glandular with nearly sessile glands, pappus rather tawny.

In marshy ground along streams; seen only in the Kaniksu Forest. →

nor → Lamb Creek, 3000 ft., Epling and Houck 10254; Fox Cr., Ellison 167; Priest R. Exp. Sta., Epling 6635.

4. Epling.

A. crassa sp. nov. [illegible] Perennial herbs 40-60 cm. tall, with stout horizontal rootstocks, their rather stout stems thinly woolly with mostly glandular hairs, somewhat viscid, branching in the upper axils with erect, elongate branches; basal leaves oblanceolate, 8-20 cm. long, 2-3.5 cm. broad, mostly subacute; ~~the~~ stem leaves 3-4 pairs, sessile, clasping the stem, the lower oblong, 8-15 cm. long, 2-5 cm. broad, the upper ovate, gradually shorter, rounded or rounded-truncate at the base, acute or the uppermost acuminate, all sharply serrate, the teeth 1-2 mm. tall, remote, all thinly villous with glandular hairs on both surfaces or the lower surface glabrate; heads several, showy, their involucral bracts 10-12 mm. long, 2-4 mm. wide, mostly broadest near the middle, lightly tapered toward the base, usually acuminate or sometimes acute, above the middle, all villous with glandular hairs, more or less purple-tinged; ray-corollas bright yellow, 15-18 mm. long, 4-6 mm. broad, the blades oval; disc corollas 7-8 mm. long; achenes 4-4.5 mm. long, black, spindle-shaped, glabrous or very sparsely hispidulous; pappus tan-color, subplumose.

~~Very~~ close to A. scaberrima Greene. ——→

north ——→ N. Fork Clearwater R., 2600 ft., Epling and Houck 9416 (type, Univ. Calif. L. A. Herb.) Elk Summit, 5700 ft., Kirkwood 1682; Monroe Cr., 6000 ft., Kirkwood 1993.

5. A. Rydbergii Greene. ——→ A low perennial herb 10-20 cm. tall, the stems thinly woolly; basal leaves 3-4 cm. long, obovate, oblanceolate or spatulate, blunt, narrowed to an indefinite petiole, subentire, cauline leaves 2-3 pairs, somewhat smaller, elliptical or oblong-lanceolate, obtuse, narrowed toward the base, entire or denticulate, all thinly woolly toward the margins and on the midvein beneath; heads usually solitary, the involucres broadly top-shaped, their bracts oblong, obtuse, 8-9 mm. long, somewhat silky and woolly towards the base; ray corollas orange-yellow, oblong-elliptical, obtuse and subentire at the apex, 15-16 mm. long; disc corollas 6.5-7 mm. long; achenes softly hirsute.

Occasional on mountain tops in thin soil and rock crevices. ——→

north ——→ Snowy Top Mt., 5000-6000 ft., Epling 7247, 6658.

A. pedunculata Rydb. ~~Perennial~~ herbs with short ~~horizontal~~ rootstocks ~~which are~~ covered with old leaf bases and densely woolly; stems 30-50 cm. tall, thinly glandular-pubescent with spreading hairs; basal leaves elliptical-lanceolate or ligulate, 6-12 cm. long, 1-2 cm. wide, rather obtuse, the margins entire or sparingly and remotely denticulate, both surfaces glandular-pubescent; cauline leaves 2-3 pairs, similar but smaller and more rounded at the base; heads solitary on elongate spreading-glandular peduncles; involucres hemispheric, the bracts oblong-lanceolate, obtuse, 12-16 cm. long, glandular pubescent especially towards the base, scarcely woolly, the margins or tips often reddish; ray-corollas orange-yellow, 18-22 mm. long, oblong, rounded and mostly tridentate at the apex; disc corollas 8-9 mm. long, the tubes pubescent; achenes hispidulous.

Occasional at lower elevations on open hillsides. → Thatuna Hills, Gail; Hope, Dunkle; Santianne Cr., bottoms, 970 m., Leiberg 1048.

7. A. Macounii Greene. ~~A perennial~~ herb 30-60 cm. tall, the stems thinly woolly; basal leaves narrowly obovate or oblanceolate, rather acute, ~~narrowed to an indefinite petiole~~, the cauline 3-12 cm. long, elliptical- oblong, or the lower oblanceolate, ~~narrowed to an indefinite petiole~~ the upper rounded and somewhat clasping, all acute, more or less sharply but remotely serrate, the teeth 1-2 mm. tall, thinly woolly on both surfaces; heads several, arranged in corymbs, their involucres sub-hemispherical, the bracts 8-10 mm. long, oblong, acute, thinly woolly, especially toward the base, and somewhat viscid; ray-corollas yellow, 15-16 mm. long, oblong, bidentate at the apex; disc corollas 6-8 mm. long; achenes thinly hispidulous, the pappus somewhat tawny.

In moist soil along streams at lower elevations in the Thuja type.

A. latifolia Bong. ~~Perennial~~ herbs 30-50 cm. tall, ~~with creeping, horizontal rootstocks~~ the glabrate or sparingly woolly stems bearing usually 3 pairs of sessile or nearly sessile ovate or elliptical leaves, the basal leaves of the previous year which were borne on a non-flowering stem having withered, their blades borne on petioles 5-12 cm. long, cordate or ovate, more or less acute, shallowly but acutely serrate, both surfaces sparingly villous, the cauline leaves similar but sessile or nearly so; heads 1 or 3 from the uppermost axils, the involucres top-shaped, sparingly villous towards the base, the bracts for the rest nearly glabrous, green and membranous, lanceolate, acute, 10-12 mm. long; ray corollas about 12, elliptical-oblong, 3-toothed at the apex, 20-22 mm. long, disc corollas 8 mm. long, the tubes villous; achenes glabrous.

Common in wet places.

9. A. diversifolia Greene. ~~Perennial~~ herbs 30-40 cm. tall, ~~with creeping horizontal rootstocks~~ basal leaves broadly ovate-cordate or reniform, rounded or obtuse, on petioles as long as the blade or longer, the cauline leaves 3-4 pairs, resembling the basal leaves but less deeply cordate and usually more acute, the petioles as long as the blade or longer, only those subtending the inflorescence sessile or subsessile, all sharply and irregularly serrate, quite or nearly glabrous on both surfaces; heads 3-5 on slender peduncles 3-12 cm. long, the lowermost longest; involucres broadly top-shaped, the bracts 8-10 mm. long, narrowly lanceolate, 1.5-2 mm. wide, glandular-puberulent and bearing a few longer slender hairs; ray-corollas 12-14 mm. long, elliptical-oblong, rounded at the apex and very shallowly 3-toothed, disc-corollas 6 mm. long, the tubes pubescent; achenes thinly hispidulous, the pappus somewhat tawny. =1

Subalpine meadow at Fish Lake, 6000-6900 ft., Epling and Houck 9829.

10. A. gracilis Rydb. ~~Perennial~~ herbs 30-40 cm. tall, ~~with creeping rootstocks~~ the stems slender, thinly viscid-woolly, the basal leaves rotund-ovate, 3-5 cm. long, blunt or acute, irregularly and coarsely toothed, on petioles subequal to the blades, the cauline leaves ovate, shortly petioled or subsessile, the upper often subentire, the uppermost greatly reduced, all sparingly pubescent on both surfaces; heads several, the peduncles of those appearing later surpassing the earliest; involucres top-shaped or somewhat obovate, the bracts oblong-elliptical, 8-12 mm. long, acute or acuminate, glandular-pubescent; ray corollas 18-20 mm. long, oblong, disc-corollas 8 mm. long, the tubes hispidulous; achenes hispidulous and somewhat glandular. =1 =1

In open places in rather dry Thuja type at lower elevations.

11. A. cordifolia Hook. ~~Perennial~~ herbs 30-50 cm. tall, ~~with creeping slender horizontal rootstocks~~ the stems glabrate or woolly and more or less viscid, bearing usually 2-4 pairs of leaves, the basal leaves of the previous year having withered, the lowermost pair broadly ovate to kidney-shaped, 5-10 cm. long, obtuse, cordate at the base, the margins coarsely dentate or sinuate, borne on petioles about equal to the blades, the upper pairs more ovate or deltoid-ovate, obtuse or acute, subcordate or truncate at the base, both surfaces woolly or nearly glabrous; heads solitary; bracts of the involucre membranous, elliptical-lanceolate, 15-20 mm. long, acute or acuminate, erect, the involucre top-shaped, viscid-woolly towards the base; ray corollas 8-12, lanceolate, 22-35 mm. long, obtuse or acuminate; disc-corollas 10-12 mm. long; achenes thinly hispidulous.

Common in moist openings in the woods.

Tribe Cynareae.

Usually coarse herbs commonly biennial, with alternate leaves ~~which~~ (in Cirsium ~~are~~ spinose on the margins). Bracts ~~very~~ numerous, closely overlapping, their margins thin and brownish in Centaurea, hooked at the tip in Arctium, thus forming a burr, spinose in Cirsium, the innermost sometimes expanded into a lacerate appendage. Receptacles bristly or hairy but not chaffy. Ray-flowers none; flowers all perfect, their corollas violet, purple, pink or white, never yellow, deeply 5-cleft into linear segments. Anthers tailed at the base, bearing elongated appendages at the tips. Pappus of usually deciduous bristles, soft and plumose in Cirsium.

Hydrocharitaceae. Frog-bit Family.

Submerged aquatics with branching stems and leaves in whorls of three, or the lower opposite, sessile, very thin, 1-veined. Flowers usually unisexual, axillary, arising from a tubular 2-cleft spathe. Cap. staminate flowers with 6 or 3 perianth segments and 9 stamens, minute, breaking from their spathes and floating to the surface where they shed their pollen. Pistillate flowers arising from a narrower spathe, the tube of the perianth much elongated, resembling a pedicel, the limb floating, with 6 perianth segments; stamens rudimentary. Perfect flowers similar to the pistillate but with 3-9 stamens. Ovary solitary, 1- chambered. Fruit maturing under water, the seeds numerous.

Anacharis Rich.

Characters as described for the family.

1. A. occidentalis (Pursh) Victorin. Waterweed. Leaves lanceolate, narrowed at the base, 1-1.5 cm. long, 1-1.5 mm. wide, sessile, minutely spinulose along the margins, appearing entire, very thin and delicate; spathe of staminate flowers 10 mm. long, club-shaped, narrowed to a stipe-like base 5-10 mm. long; sepals 5 mm. long, petals wanting; stamens 9; spathe of pistillate flowers tubular, sessile; perianth tube 3-5 cm. long, the segments 3 mm. long, linear; stigmas 3. (Elodea occidentalis St. John).

In warm shallow water of a lagoon, Lake Coeur d'Alene, Epling and Houck 10053; St. Maries slough, Epling and Offord 8034; Lake Chatcolet, St. John 9057. The staminate plant often has its leaves less crowded and even suggests another species. For the change in generic name ~~necessitated by an application of the International Rules of Botanical Nomenclature~~ see Weatherby in Rhodora (34: 114-116. 1932.).

ta

Alismaceae Water Plantain Family.

Aquatic or marsh herbs with broad somewhat fleshy basal leaves and erect flowering scapes. Flowers regular, perfect or monoecious, arranged in whorls of 3 or more, the whorls racemose or paniculed. Sepals 3, persistent. Petals 3, deciduous. Stamens 6 or more. Pistils numerous, small, borne on a flat or subconical receptacle, forming as many achenes at maturity. (Alismaceae).

O Leaves oval, with parallel ribs; flowers in panicles — 1. Alisma

O Leaves sagittate; flowers in racemes — 2. Sagittaria

1. Alisma L. Water Plantain.

Perennial marsh herbs with ~~fibrous roots and~~ erect or floating basal leaves, the blades strongly ribbed. Flowers numerous, in pyramidal panicles. Stamens 6-9. Pistils arranged in a whorl or ring on a flat receptacle.

1. A. plantago-aquatica L. → Plants erect, glabrous, with small bulbous rootstocks and fibrous roots; leaves basal, the blades oval or broadly elliptical, 8-15 cm. long, shortly acuminate at the apex, rounded or subcordate at the base, entire, ribbed with 5-7 parallel longitudinal veins, these joined by numerous parallel obliquely transverse veinlets, petioles stout, 15-25 cm. long; flowering scapes, 40-80 cm. tall, the ~~flowers numerous in pyramidal~~ panicles half as long, the branches and pedicels very slender, unequal, whorled; sepals suborbicular, 2.5-3 mm. long; petals white or pinkish, 3.5-4 mm. long, yellowish at the base; fruiting ~~spreading~~ clusters 5-6 mm. broad, the achenes 2.3-2.7 mm. long, flattened, ridged on the margins, with a median vein on the backs.

Abundant locally in open marshes or along slow streams.

2. Sagittaria L. Arrow-head.

Perennial marsh herbs with globose rootstocks which in autumn produce edible starchy tubers and fibrous roots. Leaves basal, the earliest, commonly floating, linear, the later with strongly sagittate blades on long stout petioles. Flowers monoecious or dioecious, borne in racemose whorls of 3, 3-bracted, on erect scapes, the staminate whorls uppermost. Perianth segments 6, the outer 3 herbaceous, persistent, the inner petaloid, decidous. Stamens numerous. Pistils numerous, seated on a convex receptacle, forming as many beaked achenes, at maturity.

♂ Bracts orbicular, concave, 5-10 mm. long; styles 4 .8-1.2 mm. long; anthers 2 mm. long.	1. S. latifolia
♂ Bracts ovate-lanceolate, 8-20 mm. long; styles 4 .3-.5 mm. long; anthers 1.5 mm. long	2. S. cuneata

1. S. latifolia Willd. ——→ Petioles 30-45 cm. long, the margins scarious in the lower parts; leaf-blades extremely variable, strongly sagittate, 15-25 cm. long, the reflexed lobes subequal to but shorter than the middle lobe which may be 1-10 cm. broad, its margins straight or convex, the reflexed lobes similar in each case but narrower, all acute; flowering scape stout, 30-70 cm. tall, the flowers displayed in whorls of 3 in the upper half, subtended by broadly ovate or orbicular, concave bracts .5-1 cm. long; sepals concave, greenish, 5-7 mm. long; petals white, rotund, 1.5-2 cm. long; anthers 2 mm. long; styles .8-1 mm. long; fruiting heads globose, 1.5-2.5 cm. in diameter; achenes thin, obovate, 3 mm. long, acute on the margins, the wing subequal in width to the body, tapering into an acute beak at right angles to the long axis of the body, .8-1.2 mm. long.

In marshes and in shallow water along slowly moving streams, growing with S. cuneata, Gmelin.

2. S. cuneata Sheld. ——→ Petioles 20-30 cm. long or in submerged plants much longer; leaf-blades 5-15 cm. long, not greatly variable in proportion, the middle lobe 1.5-6 cm. broad, mostly obtuse, especially in terrestrial forms, the reflexed lobes acute, for the most part, especially in floating leaves, produced straight backwards, not markedly curving; flowering scapes 30-40 cm. tall or more in submerged plants, the bracts ovate-lanceolate, 8-20 mm. long; sepals concave, greenish, ovate, 5-8 mm. long; petals white, rotund, 10-15 mm. long; anthers 1.5 mm. long; styles .3-.5 mm. long; fruiting heads globose, 8-12 mm. broad; achenes scarcely 2 mm. long, obovate-cuneate, truncate at the apex, bearing at one corner a short erect beak .3-.5 mm. long, winged, the wing subequal to the body of the achene. ——→ (S. arifolia Nutt.).

In marshes and in shallow water along slowly moving streams.

Scheuchzeriaceae. Arrow-grass family.

Erect marsh herbs with strongly sheathing rush-like leaves. Flowers perfect, in terminal racemes or slender spikes. Perianth segments 6 in 2 series. Stamens 6. Carpels 3 or 6, joined or nearly free, splitting apart at maturity if united.

O Carpels united and parallel, splitting apart at maturity;
4 leaves basal — 1. Triglochin

O Carpels divergent, joined at the base; leaves basal
4 and cauline — 2. Scheuchzeria

1. Triglochin L. Arrow-grass.

Marsh herbs with short rootstocks and fibrous roots and basal linear, acute leaves abruptly expanded toward the base and strongly sheathing. Flowers in terminal slender spicate racemes on naked slender striate scapes surpassing the leaves. Perianth segments 6, in two series. Stamens 6, the anthers sessile. Ovaries 3 or 6, 1-chambered, cylindrical or clavate, united, then splitting apart at maturity from the base upwards.

O Carpels 3, tapering toward the base at maturity — 1. T. palustris
O Carpels 6, widest toward the middle at maturity — 2. T. maritima

1. T. palustris L. Erect plants with slender stolons; leaves 10-30 cm. long; scapes 20-40 cm. tall, the pedicels at least 5-6 mm. long; pistil 3-chambered, the carpels linear-clavate at maturity, 6-7 mm. long.

Frequent in bogs. West Mt. Priest R., Leiberg 2820; Granite Sta., Sandberg 744.

2. T. maritima L. Erect plants without stolons; leaves 10-30 cm. long; scapes 20-40 cm. tall, the pedicels at length 2-3 mm. long; pistil 6-chambered, the carpels oblong, 4-5 mm. long at maturity.

Frequent in bogs and along lake shores. Hope, Sandberg 946; Thompson, 2000 ft., Leiberg 1605; Sandpoint, Loling 10400; Kootenai R., Lyall.

2. Scheuchzeria L.

Marsh plants with creeping rootstocks and rush-like leaves both basal and cauline, strongly expanded and sheathing at the base, usually exceeding the flowers. Flowers in short racemes, subtended by membranous or leaflike bracts. Perianth segments 6, in 2 series. Stamens 6, on slender filaments. Ovaries 3, united at the base, 1-chambered, divergent at maturity.

1. S. palustris L. var. americana Fernald. Rootstocks sheathed by old leaf bases; stems zig-zag, 15-30 cm. tall, leaves rather stiffish, linear, 10-20 cm. long, the lowermost sheathing the stems for 4-6 cm. or more, some exceeding the flowers; flowers several in terminal racemes 4-5 cm. long, on pedicels 1.5-2.5 cm. long; perianth segments oblong, membranous, 1-veined, 4 mm. long; carpels 5-6 mm. long.

To be expected in sphagnum bogs at higher elevations.

Potamogetonaceae. Pondweed family.

Perennial acquatic plants with submerged leaves or some floating, these of a different form. Flowers perfect or monoecious in compact usually emersed cylindrical spikes or in small axillary clusters. Proper perianth none, the flowers sometimes in a thin membranous sheath. Stamens 1 or 4. Pistils of 1-4 distinct carpels, 1-chambered and 1-ovuled, forming small drupelets or achenes.

O Flowers monoecious; stamens solitary; ovaries 2-5 in small axillary clusters; fruits more than twice as long as broad ..... 1. Zannichellia

O Flowers perfect; stamens 4; ovaries 4, in axillary usually cylindrical spikes ..... 2. Potamogeton

1. Zannichellia L. Horned Pondweed.

Stems slender, branching from creeping rootstocks; leaves filiform, all opposite, 1-veined. Staminate and pistillate flowers together in small axillary clusters without a proper perianth but enclosed in the bud by a thin membrane; staminate solitary, consisting of a solitary 2-chambered stamen; pistillate 2-5, ovary flask-shaped, tapering into a short style, expanded then into a cup-shaped stigma. Fruit a small nutlet.

1. Z. palustris L. Leaves submersed, linear, 2-5 cm. long, 1-veined, obtuse; stipules scarious, free; nutlets 2 mm. long, shaped somewhat like a grain of wheat, tipped by the persistent style 1 mm. long, elevated upon a stalk .5-1 mm. long, the base auriculate.

Found in ponds in shallow waters of lakes in the Ward to brackish water" (Piper).

, ribbon-like,

2. Potamogeton (Tourn.)L. Pondweed.
alternate or the upper opposite,

Aquatic plants with flattened 2-ranked leaves, either all similar, submerged and more or less linear, or some floating, dissimilar to the submerged ones, the blades dilated and petioled; stipules membranous, more or less united and sheathing, enclosing the flower buds. Flowers in axillary cylindrical spikes, usually emersed. Perianth segments 4, valvate in bud. Stamens 4, opposite the sepals; ovaries 4, distinct, 1-chambered, forming 4 sessile subglobose drupelets.

0 Plants with both floating and submerged leaves, the
4 former rather leathery and firm, the latter smaller, thin and limp,
differing in shape and texture [redacted]

2 Floating leaves prevailingly shallowly cordate at the
6 base; submerged leaves bladeless, consisting of
petioles only, or wanting — 1. P. natans

2 Floating leaves narrowed at the base, never cordate;
6 submerged leaves with blades varying from linear
to ovate

4 Largest submerged leaves 3-6 cm. broad — 2. P. amplifolius

4 Largest submerged leaves rarely 3 cm. broad,
8 usually less than 2 cm.

6 Submerged leaves narrowed to distinct
10 petioles usually 3-5 cm. long or more — 3. P. americanus

6 Submerged leaves sessile or sometimes
10 narrowed to indistinct petioles

8 Floating leaves dull, narrowed at the base and
12 often attenuate into the petiole; stems 1-1.5
mm. thick.

10 Submerged leaves similar in shape to the
floating leaves but thinner, 8-15 mm.
14 wide; plants tinged with red — 4. P. [redacted] tenuifolius

10 Submerged leaves linear, dissimilar in
shape to the floating leaves, infre-
14 quently 8 mm. wide, usually about
4-6 mm.; plants green — 5. P. epihydrus

8 Floating leaves rather glossy, obtuse or
rounded at the base; stems and petioles very
12 slender, prevailingly .5 mm. in diameter or
less — 6. P. [redacted] gramineus

0 Plants with all leaves submerged, all similar
2 leaves ovate to lanceolate, 1.5-3 cm. wide or more,
4 clasping at the base, the margins wavy

4 Leaves blunt and lightly hooded at the apex;
8 stipules persistent, very obtuse — 7. P. praelongus

4 Leaves sharp and plane at the tips; stipules
9 acute, soon breaking into shreds 8. P. Richardsonii

2 Leaves linear, mostly 1-2 mm. wide or less,
6 rarely more than 6 mm. wide, neither
clasping nor wavy.

4 Leaves 4-6 mm. wide, grasslike (see
8 also P. ~~heterophyllus~~ graminеus)

6 Leaves acute at the apex, their
10 margins finely serrulate as seen
under a lens; stems round 9. P. Robbinsii

6 Leaves blunt at the apex but mucronate,
10 their margins entire; stems flattened, zosteriformis
commonly winged 10. P.

4 Leaves 1-2 mm. wide or less

6 Stipules free from the petioles and
10 leaf-blades

8 Leaves bearing two small translucent
12 glands near the base; nutlets
grooved on the back but not
keeled 11. P. pusillus

8 Leaves without glands; nutlets
12 keeled 12. P. foliosus

6 Stipules joined to the base of the
10 leaf

8 Stigma sessile; nutlets rounded
12 on the back, not keeled 13. P. filiformis

8 Stigma elevated on a short
12 style; nutlets 2-keeled on
the back. 14. P. pectinatus

1. P. natans L. ——→ Stems mostly simple, the blades of the floating leaves oval or ovate, leathery, 5-8 cm. long, 3-5 cm. broad, rounded or obtuse at the apex, rounded and usually very shallowly cordate at the base, borne on stout petioles 5-20 cm. long; submerged leaves reduced to bladeless petioles or wanting; stipules rather firm, 4-6 cm. long, acute; spikes cylindrical, 2.5-5 cm. long, 1 cm. broad in fruit, borne on stout peduncles 5-15 cm. long; nutlets 4 mm. long.

dull brownish-green,

Common in shallow pools, in marshes and along lake shores.

2. P. amplifolius Tuckerm. ——→ Stems elongate, mostly simple, the blades of the floating leaves oval, 6-8 cm. long, obtuse or rounded at both ends, 30-40 veined, borne on petioles 5-10 cm. long or longer; submerged leaves strongly undulate, mostly petioled, the uppermost elliptical or ovate, 8-12 cm. long, 3-6 cm. wide, the lower narrower and elongated; stipules 4-12 cm. long, acute or acuminate; spikes cylindrical, 2.5-5 cm. long, borne on stout peduncles 5-20 cm. long; nutlets 1.5-4 mm. long, smooth, 3-keeled, the middle keel prominent.

Frequent in shallow water of lake margins.

3. P. americanus C. & S. ——→ Stems much-branched, the blades of the floating leaves elliptical, 3-8 cm. long, 1-2.5 cm. wide, ~~mostly~~ obtuse at both ends and abruptly narrowed to petioles 1-3 cm. long, submerged leaves linear-lanceolate or linear-oblanceolate, 10-15 cm. long, subequal to the floating leaves in width or narrower, narrowed to distinct petioles 3-5 cm. long or longer; spikes cylindrical, 2-4 cm. long, 6-7 mm. thick at maturity, borne on peduncles about as thick as the stems, 2-4 cm. long; nutlets smooth, 3-keeled, the middle keel prominent.

St. Marie's slough, Epling and Offord 8031.

or pointed at tip,

4. P. tenuifolius Raf. Stems mostly simple, the floating leaves 4-8 cm. long, 5-15 mm. wide, oblanceolate, obtuse, narrowed below the middle to an indistinct petiole, firm but hardly leathery; submerged leaves sessile or nearly so, linear-elliptical or linear-oblanceolate, mostly acute at both ends, similar to the floating leaves in size and shape but thinner; stipules 20-35 mm. long; spikes cylindrical, reddish, 12-25 mm. long, about 8 mm. thick at maturity on peduncles 4-10 cm. long, somewhat thicker than the stem; nutlets smooth, 2-2.5 mm. long, 3-keeled, the middle keel narrowly winged. (P. alpinus Balb.).

In mountain streams emptying into Lake Pend Oreille, Leiberg 194.

5. P. epihydrus Raf. Stems simple or branched, compressed, slender, the blades of the floating leaves narrowly oval, 3-6 cm. long, 12-30 mm. wide, mostly obtuse, the apex narrowed at the base and attenuate into petioles subequal to the blades or longer; submerged leaves sessile, numerous, thin, linear or linear-lanceolate, mostly 5-nerved, with a cellular reticulation along the midrib, 6-12 cm. long, commonly 3-6 mm. wide; spikes usually several, cylindrical, 1-4 cm. long, 8-9 mm. wide in fruit, on stout peduncles 3-6 cm. long; nutlets 3 mm. broad, pitted, 3-keeled.

East fork,

Shallow water in bog near ~~L. Pl~~ Priest L., Epling. The var. Nuttallii (C. & S.) Fern., smaller in leaf and fruit, is to be expected.

6. P. gramineus L. var. graminifolius Fries. Stems simple or branching, very slender, the internodes about equalling the leaves; blades of the floating leaves leathery, 3-7 cm. long, 1.5-3 cm. wide, oval, obtuse, or rounded at both ends, on slender petioles usually 1-2 times as long as the blades; submerged leaves sessile, mostly 3-12 cm. long, 3-6 mm. wide, linear or linear-lanceolate, 3-7-nerved; spikes cylindrical, 2-4 cm. long, 7-8 mm. thick at maturity, on peduncles 3-8 cm. long, twice as thick as the stems; nutlets 1.5 mm. long, obscurely keeled. (P. heterophyllus Schreb.)

Frequent in shallow pools and along lake margins on muddy bottoms; the floating leaves sometimes wanting. Lake Pend Oreille, Leiberg 195; East end, Priest ., Sandberg & Leiberg; Lake Coeur d'Alene, Suksdorf & Houck 10051; Upper Priest Lake, Sandberg 7175.

7. P. praelongus Wulf. Stems white, much-branched, or zig-zag, 1-2 m. long, very leafy; leaves all submerged, mostly oblong-lanceolate, 10-20 cm. long, 15-30 mm. wide, more or less clasping at the base, somewhat crisped; stipules membranous, white, blunt and persistent; peduncles stout, about equal to the stems in diameter, 10-10 cm. long, the spikes cylindrical, 2-5 cm. long, nearly 1 cm. thick in fruit; nutlets smooth, mostly with a single sharp keel.

Upper Priest Lake, Sandberg 7165.

8. P. Richardsonii (A. Benn.) Rydb. Stems branching, all leaves submerged and similar, ovate to lanceolate, 4-10 cm. long or more, acuminate, clasping at the base, strongly wavy; the stipules 1-2 cm. long, soon breaking into shreds; spikes several, cylindrical, 2-5 cm. long, 8-9 mm. thick in fruit, on stout peduncles 5-10 cm. long; nutlets 3 mm. long, obscurely keeled on the back.

9. P. Robbinsii Oakes. Stems slender, 50-80 cm. long or more, little branched; leaves all submerged, linear, acute, 5-12 cm. long, 3-5 mm. broad, minutely serrulate on the margins, the stipules white and membranous, sheathing; peduncles 3-6 cm. long, slender, about as thick as the stems; spikes 1-1.5 cm. long, not dense; nutlets 3-keeled, 3.5-4 mm. long.

On muddy bottoms, Upper Priest Lake, Epling 7741.

10. P. zosteriformis Fern. Stems flattened and somewhat winged, branching; leaves all submerged, linear, 10-20 cm. long, 4-6 mm. wide, grasslike, even, abruptly narrowed at the apex to a short mucro, clasping at the base, with usually 3 principal veins; stipules oblong, obtuse, deciduous; peduncles 2-3 cm. long; spikes cylindrical, 1-2 cm. long; nutlets smooth, 3.5-4 mm. long, 3-keeled. (P. compressus Am. auth.).

On muddy bottoms, Upper Priest Lake; Lake Pend Oreille.

11. P. pusillus L. Stems very slender, branched, 30-50 cm. long; leaves linear, 4-6 cm. long, .5-1.5 mm. wide, mostly 1-veined, flat, bearing two small translucent glands at the base of the blade; stipules 6-8 mm. long, fibrous, whitish, deciduous; peduncles very slender, commonly 3-8 cm. long, the inflorescence an interrupted spike 1-3 cm. long; nutlets 1.5-2 mm. long, 1-grooved on the back, not keeled.

Frequent in shallow pools or marshes or lake margins. P. panormitanus Biv. may be separated with difficulty from P. pusillus, by its delicately veined, membranous, greenish stipules.

12. P. foliosus Raf. Stems flattened, very leafy, all leaves submerged and similar, 3-5 cm. long, 1.5-2 mm. wide, flat, linear, 3-5-veined, the midrib prominent; spikes few, few-flowered, subglobose, 6-8 mm. in diameter, on peduncles subequal in length or longer; nutlets 1.5 mm. broad, rough, the keel winged, the margin of the wing uneven.

Paradise Cr., Moscow, Henderson 2716.

13. P. filiformis Pers. var. borealis (Raf.) St. John. Stems very slender, with numerous crowded leaves mostly 5-15 cm. long, scarcely .5 mm. wide, 1-veined; stipules adnate to the base of the blade, the free portion 3-5 cm. long; peduncles very slender, commonly 4-6 cm. long, the short interrupted spike 1-1.5 cm. long; stigma sessile; nutlets 2-3 mm. long, not keeled.

tr. Upper Priest Lake, shallow margin, Spling 7775.

14. P. pectinatus L. Stems very slender, 30-90 cm. long or more, much branched, spreading fanwise; leaves linear, 1-1.5 mm. broad, 8-12 cm. long, 1-veined, their stipules adnate to the base of the blade for about half their length, 15-25 mm. long, scarious on the margins; peduncles very slender, commonly 5-10 cm. long, spike interrupted, 2-3 cm. long; nutlets rounded on the back, 3-4 mm. long, obscurely 3-keeled.

Shallow water, Lake Pend Oreille, near Hope, Sandberg 964. A variable species.

Naiadaceae. Naias Family.

Submerged aquatics with slender branching stems and linear opposite or whorled leaves with spinulose margins. Flowers monoecious or dioecious, solitary in the axils. Staminate flowers consisting of a single stamen enclosed by a double perianth; pistillate flowers naked, consisting of a single pistil with 2-4 subulate stigmas. Fruit a small nutlet.

Naias L.

Same characters as the family.

1. N. flexilis (Willd.) Rostk. & Schmidt. Stems branching, 3-20 cm. tall; leaves flat, 10-20 mm. long, 1-2 mm. wide, acute, the margins finely spinulose-serrate under a lens; flowers monoecious, very inconspicuous, the staminate flower 2.5 mm. long, the pistillate 2.5-3 mm. long, attenuate into a style which is branched at the summit; nutlet white and shining, tapering at each end, 3 mm. long.

A bright green tufted plant with fibrous roots growing in shallow clear water of sandy shelving lake shores; abundant locally. Upper Priest Lake, Epling 7739; near Viola (fide St. John). Ceratophyllum, which may be confused with Naias ~~for~~ its spinulose leaf margins, has palmately divided leaves, ~~and lacks roots.~~

Sparganiaceae. Bur-reed Family.

Marsh or aquatic plants with creeping rootstocks and alternate linear leaves. Flowers monoecious, borne along the stems in compact globose clusters, the staminate clusters toward the apex, the pistillate below, all sessile or the lowest on short peduncles. Perianth of 3-6 chaffy segments. Stamens 5, distinct. Ovaries 1-chambered, forming small 1-2 seeded nutlets which terminate in a stout beak.

Sparganium (Tourn.)L. Bur-reed.

Same characters as the family.

Pistillate flowers sessile; nutlets rounded-truncate at the apex — 1. S. eurycarpum

Pistillate flowers on short stalks; nutlets tapering more or less equally both ways from the middle

Beaks of the nutlets usually 1.5-2 mm. long; fruiting heads 1.5-2.5 cm. in diameter

Lower leaves keeled, V-shaped in cross-section, firm, often sustaining their own weight; plants usually of small pools — 2. S. simplex

Lower leaves rounded, not keeled, all flat and floating in water, usually 3-8 mm. wide — 3. S. angustifolium

Beaks of the nutlets less than 1 mm. long, conical; fruiting heads usually about 1 cm. in diameter — 4. S. minimum

1. S. eurycarpum Engelm. ——→ Stems stout, more or less erect, 60-90 cm. tall; leaves 50-70 cm. long, 8-15 mm. wide, flat, slightly keeled on the lower surface; inflorescence usually branched, the pistillate heads very compact, 2-4, 20-25 mm. in diameter when mature; perianth scales 5 mm. long in fruit; achenes 7-8 mm. long, rounded-truncate at the apex and abruptly narrowed into the stout beak which is 3-4 mm. long.

Slackwater, 2125 ft., Leiberg 1305; St. Joe R., Humphrey; ~~Port Hill, Hulbert, Spence~~

Port Hill, Hulbert & Spencer.

2. S. simplex Huds. ——→ Stems 20-60 cm. tall, the leaves 5-10 mm. broad or more, at least the lower ones keeled and V-shaped in cross-section, flat, firm, often sustaining their own weight, usually not limp [redacted], 20-60 cm. long; pistillate heads 1-3, borne in the axils of the uppermost leaves, the lowermost on peduncles 3-4 cm. long, 15-20 mm. in diameter at maturity; achenes shining, 3-4 mm. long, narrowed at the base to a stalk 1-2 mm. long, attenuate at the apex to a slender beak about as long as the achene proper.

Upper Priest Lake; Lake Coeur d'Alene; Santa; Granite Sta.; Priest R.; Rathdrum.

3. S. angustifolium Michx. ——→ Stems slender, 30-90 cm. long, the leaves slender, limp and floating, not keeled, 3-5 mm. wide; pistillate heads 2-3, borne in the axils of the uppermost leaves, the lowermost on peduncles 3-4 cm. long, 15-20 mm. in diameter at maturity; achenes shining, 3 mm. long, narrowed below to a short stalk about 1 mm. long, rather abruptly attenuate into a slender beak 1.5-2 mm. long.

Upper Priest Lake; Lake Coeur d'Alene; Boville; St. Joe R.

4. S. minimum Fries. ——→ Stems slender, 10-30 cm. tall, the leaves thin, 20-30 cm. long, 3-4 mm. broad, flat; pistillate heads usually 2, 8-12 mm. in diameter at maturity, the lower borne on peduncles 1-2 cm. long; achenes dull, scarcely 3 mm. long, nearly sessile, abruptly narrowed to a short beak .5-1.5 mm. long.

Priest Lake, Piper 3729.

Typhaceae. Cat-tail Family.

Tall herbs from creeping rootstocks, commonly found growing in water or marshy ground. Leaves linear, flat, ascending, basal, sheathing at the base. Male and female flowers borne on the same plant but separately in terminal oblong, densely crowded spikes, the staminate spikes uppermost and more slender. Perianth of bristles only. Stamens 2-7, the filaments branching. Ovary 1, 1-2-celled, the styles as many as the chambers. Fruit an achene. Bristles and sterile club-shaped flowers are interspersed among the fertile ones.

chambered

Typha L. Cat-tail.

Characters of the family: the only genus.

1. T. latifolia L. → Commonly as tall as a man, stout; leaves 10-20 mm. broad, flat, tapering above, expanded and sheathing at the base; pistillate spikes a rich brown, 12-25 cm. long when mature, 2.5-3 cm. thick; staminate spikes not separated by a portion of barren stem, 12-15 cm. long, 1 cm. wide, tapering, the staminate flowers dropping in age, leaving the tip of the stem naked; achenes disseminated by the silky tuft of bristles.

Frequent in boggy meadows, open swamps and roadside pools below 3000 ft. Potlatch; Margin of Lake Coeur d'Alene, 2500 ft.; Lonners Ferry. T. angustifolia, should it be found in our region, can be distinguished by the fact that the staminate spikes are separated by an interval.

Liliaceae. Lily Family.

Perennial herbs with ~~corms,~~ corms, bulbs or rootstocks. Stems simple or branching and leafy or often scapelike, the leaves being then chiefly or wholly basal and linear. Flowers solitary or clustered, commonly in racemes or umbels, mostly regular and perfect; perianth with 6 subequal segments, alike in shape and color, less often differentiated into sepals and petals; stamens 6, hypogynous or adherent to the perianth at its base. Ovary superior, ~~3-chambered;~~ styles 3 or 1; if one, either entire or 3-cleft. Fruit a capsule or berry, the capsule commonly loculicidal. (Perianth segments 4, stamens 4, ovary 2-chambered in Maianthemum.)

0 Plants having more or less ovoid corms or bulbs, the coats of which
4 are membranous or fibrous or else ~~scaly~~ fleshy

2 Flowers in umbels at the end of a leafless stalk

4 Perianth segments nearly distinct; herbage usually with
8 the odor and flavor of onions — 1. Allium

4 Perianth segments joined to form a short tube; herbage
8 without marked odor. — 2. Triteleia

~~2 Flowers in racemes or solitary~~

2 Perianth segments in two unlike whorls, the outer
6 sepal-like, the inner broad and petal-like, hairy — 11. 3. Calochortus

2 Perianth segments not markedly differentiated, not
6 hairy

4 Stems leafy, the leaves in whorls or alternate;
8 bulbs with fleshy scales or with grain-like bulblets at the base

6 Petals strongly recurved; leaves in whorls
12 of 6-8 — 12. 4. Lilium

6 Petals not recurved; leaves in whorls of 2-5 — 13. 5. Fritillaria

4 Stems scapelike, the leaves chiefly basal

6 Leaves 2-3 cm. or more wide; flowers yellow, at least at the base,
10 commonly 1-3 — 14. 6. Erythronium

6 Leaves rarely more than 1 cm. wide; flowers
10 never yellow, several to numerous

6 Style 1, 3-lobed at the summit; flowers
12 bluish or purple, segments 20-25 mm. long — 15. 7. Camassia

6 Styles 3; flowers greenish or yellowish-
12 white or sometimes tinged with purple, segments 6-15 mm. long.

10 Flowers erect, segments spreading, 14 each with a gland at the base — 3. Zygadenus

10 Flowers pendant, the segments 14 recurved at the tip, glandless — 4. Stenanthium

0 Plants with rootstocks which are commonly slender and 4 trailing, frequently thickened and tuberous

2 Stem with 3 broad leaves in a whorl at the summit; 6 flowers solitary in the whorl — ~~10. Trillium~~

~~2, Stem with leaves alternate or basal, not whorled~~

2 Leaves chiefly or wholly basal

4 Leaves 3.5-4 cm. broad; flowers 1-2 — 10. Clintonia

4 Leaves 1 cm. broad or less; flowers several 8 or numerous

6 Leaves few, 10-30 cm. long; flowers in 10 clusters of three in a short raceme — 1. ~~12~~. Tofielda

6 Leaves very numerous, 50-80 cm. long, 10 forming a dense tuft; flowers numerous, arranged singly in an elongated raceme — 2. ~~13~~ Xerophyllum

2 Leaves equally distributed along the stem, not 6 basal

4 Plants commonly as tall as a man, the leaves 8 oval, 10-20 cm. broad or more — 5. ~~14~~ Veratrum

4 Plants 1 m. tall or less; leaves 5-6 cm. 8 broad or less

6 Flowers in terminal racemes; stems unbranched

8 Leaves 2-3, deeply cordate, petiolate; 12 flower parts in 4's — 6. ~~15~~ Maianthemum

8 Leaves several, hardly cordate, sessile; 12 flower parts in 3's — 7. ~~16~~ Smilacina

6 Flowers solitary or in pairs in the axils 10 of the leaves; stems mostly branching

8 Flowers solitary in the axils — 8. ~~17~~ Streptopus

8 Flowers commonly in pairs (1-3) in the 12 axils of the uppermost leaves — 9. ~~18~~ Disporum

1.

12. Tofieldia Huds.

Perennial herbs with short horizontal or ascending rootstocks and mostly basal grass-like leaves. Stems erect, scapelike. Flowers in a short terminal raceme, or slender panicle, small, greenish or white, subtended by small bracts. Perianth segments glandless, spreading, subequal, persistent, subtended by a scarious 3-lobed involucre. Stamens 6, filaments filiform. Pistil sessile, 3-lobed, the lobes spreading, capsule septicidal, beaked by the persistent style; seeds numerous, with or without an appendage.

1. Tofieldia occidentalis Wats. Rootstocks fibrous-coated, densely matted; leaves 10-30 cm. long, 4-6 mm. wide, glabrous, acute; stems 30-40 cm. tall, viscid-glandular; flowers about 12 or more in clusters of three, each cluster subtended by an acuminate scarious bract; involucre scarcely 1 mm. long, the bractlets connate about half their length, forming a cup near the base of the corolla; perianth-segments white or purplish tinted, the inner oblong-oblanceolate, the outer ovate or obovate, all 3-veined, 4 mm. long, spreading; stamens erect, subequal to the segments; capsule ovoid, 6-8 mm. long, 3-lobed, the tips recurved, often purplish; seeds 1.8 mm. long, amber color, narrowly oval, the testa loose, terminating in a filiform appendage twice the length of the seed or more.

Frequent in sphagnum bogs 4000-6000 ft. (Oxford R. S., Epling and Houck 9663); found also in small subalpine communities along the sandy margins of the St. Joe and Clearwater rivers, Epling and Houck 9431, as low as 3000 ft.

subsp. curta, subsp. nov. Similar, differing in the seeds which are oval, the testa loose, mostly without an appendage. — Priest Lake, Piper 3724 (type); ~~Wash. Sta. Coll.~~; Minards Bay, Priest Lake, 2000 ft. MacDougal 287.

2.

~~3.~~ Xerophyllum Michx.

Stem simple from a short tuberous woody rootstock, the roots densely fascicled. Leaves numerous, forming a dense tuft, chiefly basal, narrowly linear, scale-like on the stem. Flowers in a dense terminal raceme, withering-persistent. Perianth segments white, distinct, spreading, glandless; stamens 6, filaments subulate, anthers oblong. Ovary 3-lobed in cross section. Styles 3. Fruit a subglobose, loculicidal capsule.

1. X. tenax (Pursh) Nutt. Bear Grass. Tuft or cushion 20-50 cm. tall, as much as 1 m. in diameter, the leaves 50-80 cm. long, linear, about 1 cm. wide and purplish at the base, attenuate, very tough and hard, the margins finely barbed; racemes at first globose, 10-12 cm. in diameter, lengthened at maturity to 30-40 cm.; perianth segments 7-8 mm. long, mostly oblong, white, spreading; stamens 10 mm. long, erect; capsule broadly ovate, 5-6 mm. in diameter, 3-lobed, the styles persistent, the pedicels 3-4 cm. long in fruit; seeds 2.5 mm. long, angular, curved. (Helonias tenax Pursh).

Common throughout our range above 4000 ft., being often the first plants to occupy talus slopes in subalpine situations, often covering acres, being slowly replaced in part by Abies lasiocarpa. The young flowering shoots are much browsed by deer. The leaves are used in basketry and mat-making by the Indians. Type ~~taken~~ collected by Lewis near Collins (now Lolo) Cr. on Lolo Trail.

3.

Z. Zygadenus Michx.

Herbs from membranous-coated bulbs. Leaves linear, chiefly basal, those of the stem reduced in size. Flowers rather showy, greenish or white, in terminal racemes, usually perfect. Perianth-segments distinct or united to the ovary, subequal, withering-persistent, spreading, each bearing a greenish gland near the base. Stamens 6, about equal to the segments. Styles 3, distinct, persistent. Fruit a deeply 3-lobed capsule.

4 { a Perianth segments 7-8 mm. long, the gland deeply notched, conspicuous; petals narrowed at the base but not abruptly — 1. Z. elegans

4 { b Perianth segments rarely 5 mm. long, the gland obovate, inconspicuous; petals abruptly narrowed at the base to form a claw — 2. Z. gramineus

1. Z. elegans Pursh. Blubs lanceolate, often clustered, the coats brown or blackish; leaves commonly 20-25 cm. long, 4-5 mm. wide, tapering, acute, sheathing; ~~sheathing~~, stems 25-35 cm. tall, glaucous, slender; raceme open, each flower subtended by a scarious, often purplish, ovate bract, shorter than the pedicels; pedicels increasing in fruit to frequently 2-3 cm. long or more, ascending; perianth greenish or yellowish-white, the segments equal, 7-8 mm. long, ovate-elliptical or obovate, narrowed evenly at the base or slightly clawed, the gland greenish or yellow, thick and conspicuous, deeply obcordate; anther-sacs divergent, filaments expanded toward the base; capsule elliptical, 20-25 mm. long, surpassing the erect, withered, perianth. (Anticlea elegans Rydb.).

Abundant locally in subalpine meadows. Snowy Top Mt., 6000 ft.; Fish Lake, 6000 ft. This plant, like Hedysarum occidentale, exhibits a discontinuous distribution from ~~extreme~~ adjacent Washington and northern Idaho to the Olympic Mts.

2. Z. gramineus Rydb. Death Camas. Bulbs narrowly ovoid, usually erect, 1.5 cm. long, usually less than 1 cm. in diameter, the outer coats blackish; leaves commonly 15-25 cm. long, 3-5 mm. wide, about 2/3 the length of the stem, the margins minutely barbed, rough to the touch, the uppermost leaves bractlike; flowers numerous, pale yellow with tinges of green, in racemes, the bracts scarious, linear, 1 cm. long or less; pedicels slender, 5-8 mm. long in flower; outer perianth segments rotund-ovate, nearly sessile, 3.5-4 mm. long, the inner broadly ovate, very obtuse, narrowed to a short claw, the gland yellow, indistinct, hardly or not at all surmounted by a ridge; stamens 5 mm. long, surpassing the lanceolate 3-lobed ovary by 1-2 mm.; fruit not seen.

Gravelly thin soil in or near coniferous woods or in meadows, usually at lower elevations; poisonous to stock but not of sufficient abundance in our region to be a serious factor.

4. Stenanthium Kunth.

Stems simple, arising from a bulb with thin coverings. Leaves chiefly basal, linear, Flowers in a terminal raceme, nodding, bracted. Perianth-segments subequal, narrow, persistent; stamens 6, inserted on and included by the segments; anthers kidney-shaped, becoming confluent; styles 3. Fruit a 3-beaked septicidal capsule. Seeds winged.

1. S. occidentale Gray. Bulb lanceolate, commonly reclining on its side, 1-2 cm. long; stems slender, 20-40 cm. tall; leaves curving, 15-30 cm. long, 1-2.5 cm. wide, glabrous, mostly basal, sheathing; diminished to one or two acuminate scales above; raceme 5-20 cm. long, pedicels very slender, 1-2 cm. long, each subtended by a subequal scarious lanceolate bract; flowers greenish or purple, tubular below, the segments overlapping, 12-15 mm. long, linear-lanceolate, the tips recurving; stamens 9-10 mm. long; styles subequal; capsule erect, about 1 cm. long, attenuate into the persistent styles; seeds 3-4 mm. long, flat, the testa oblong, inflated. (Stenanthella occidentalis Rydb.).

On shaded rock outcrops above water or in rich bottoms among dense herbage, 3000-4000 ft. Priest Lake; Stevens Peak, 5600 ft.; Lime Cr.; Lake Pend Oreille; Upper Priest Falls, 3000 ft.; upper Priest R., 3000 ft.; Snowy Top Mt., 5000 ft.

5.

~~14~~. Veratrum (Tourn.) L. False Hellebore.

Coarse corn-like herbs with thick bulbous rootstocks. Stems simple except in the inflorescence, leafy. Leaves broad, entire, sheathing the stem, the veins rib-like. Flowers greenish or white in terminal panicles, the lowermost frequently imperfect, staminate. Perianth segments equal, persistent, attached to the base of the ovary. Stamens 6, opposite the perianth-segments and included by them, recurving in the upper part, the anthers directed downward, becoming confluent. Styles 3, fruit a 3-chambered, 3-lobed capsule, each lobe attenuate into the persistent style. Seeds flattened, the testa wing-like.

○ Flowers green, the branches of the panicle markedly
4 drooping — 1. V. Eschscholtzii

○ Flowers white, the branches of the panicle extended
4 laterally or ascending

2 Panicle unbranched in upper third or half,

spicate; perianth-segments 12-14 mm. long 2. V. caudatum

2 Panicle branched to the very tip; perianth segments

6 6-9 mm. long 3. V. Jonesii

1. V. Eschscholtzii Gray. Stems commonly 2 m. tall, very leafy, the leaves spreading, 15-30 cm. long, oval or orbicular below, elliptical above, sessile, the base sheathing the stem for 10-20 cm., appearing plaited parallel to the veins, upper surface glabrous, lower downy; panicle 30-60 cm. long, the branches drooping, softly woolly; pedicels 1-4 mm. long, each subtended by a membranous, ovate bract 4-5 mm. long, perianth-segments 6-8 mm. long increasing to 12 mm. in fruit, greenish, narrowly elliptical, acute at both ends and narrowed at the base; stamens half the length of the segments; capsule erect, 2 cm. long, lanceolate; seeds 3.5 mm. long, surrounded by the inflated wing-like testa 4 x 8 mm., elliptical or oval in outline; ~~6 mm. long, 4 mm. wide~~. (V. Eschscholtzianum (R. & S.) Rydb.).

Common in subalpine seepage spots, along streams, in meadows or alder thickets, rarely below 4000 ft. We are ~~here~~ following Heller's treatment as to the ~~epithet~~ name (Muhl. 1:120).

2. V. caudatum Heller. Stems glabrous in the lower parts, pubescent in the upper with fine hairs, 1.5-2 m. tall, the internodes 10-20 cm. long; leaves sheathing the stems for 2-10 cm., the blades oval, or the lower orbicular, the upper acute, 15-30 cm. long, both surfaces glabrous; panicle simple, 40-50 cm. tall, its branches 6-15 cm. long, woolly, commonly extended at right angles to the stem, sometimes ascending or the lower somewhat drooping, the upper half or third of the inflorescence unbranched, spicate, the flowers crowded along the branches and principal axis, white, on pedicels 1-3 mm. long; perianth segments 12-14 mm. long, elliptical or oval, 4-5 mm. wide, the alternate ones somewhat broader with a V-shaped green gland at the base; stamens 6 mm. long, capsule erect,

25-28 mm. long; seeds elliptical 4.5-3 mm. long, surrounded by an obovate wing, 9-10 mm. long, 4-5 mm. wide.

Common in boggy meadows within the white pine type from 2500-5300 ft.; gregarious, the extended arms of the inflorescence suggesting the ~~manikin~~ hay ricks used in Austria.

3. V. Jonesii Heller. Stems 1.5-2 m. tall, glabrous in the lower parts, pubescent in the upper with fine hairs, the internodes 10-20 cm. long; leaves sheathing the stems for 2-10 cm., the blades oval or the lower orbicular, 15-30 cm. long, the lower surface softly downy, the upper leaves acute; compound panicle 40-80 cm. long, twice or thrice branched, the slender branches ascending, woolly; flowers white, approximate but hardly crowded, on pedicels 1-3 mm. long; perianth segments 7-9 mm. long, broadly obovate, 4-5 mm. wide, the alternate ones somewhat broader with a V-shaped green gland at the base, all abruptly narrowed to a stipe 2-2.5 mm. long; stamens 5 mm. long; capsule erect, 3-3.5 cm. long; seeds 6 mm. long, surrounded by a membranous wing, ovate to lanceolate in outline, 15 mm. long, 5 mm. broad. (V. californicum sensu Piper non Durand).

Frequent along roadways or on hillsides in the grassland infrequently reaching into the forested regions.

6.

~~6~~. Maianthemum Weber.

Erect, unbranched herbs with slender creeping rootstocks and 2-3 broad alternate leaves. Flowers small, white, in terminal racemes. Perianth segments 4. Stamens 4, inserted on the segments, anthers retrorse. Ovary 2-chambered, stigmas 2, ovules 2 in each locule. Fruit a subglobose berry.

1. M. bifolium (L.) DC. var. kamtschaticum (Gmel.) Trautv. & Meyer. Rootstock 1.5-2 mm. in diameter; stem slender, glabrous, 20-30 cm. tall; basal leaf on a petiole 12-15 cm. long, the blade deeply cordate or subreniform, abruptly acuminate, 6-12 cm. long; cauline leaves commonly 2, borne in the upper part of the flexuous stem, similar to the basal, ovate, on petioles 1-4 cm. long, glabrous; raceme 3-6 cm. long, the pedicels spreading, in groups of 2-3, slender, 3 mm. long; perianth segments oval, 2 mm. long; stamens 1/2-2/3 as long as the perianth, the style subequal; berry red, 6 mm. in diameter; seeds commonly 2-3, ovate, 3 mm. long.

Priest Lake (probably in shaded woods near the margin), Piper 3685; not since collected.

4.

16. Smilacina Desf. False Solomon's Seal.

Stems simple, leafy, from slender horizontal rootstocks; leaves sessile. Flowers borne in terminal racemes, pedicels jointed at the summit, each subtended by a small scale. Perianth white, withering-persistent, the segments distinct, equal, spreading. Stamens inserted at the base of the perianth-segments, anthers versatile. Style obscurely 3-lobed at the apex, persistent; fruit a globose berry with 1-4 seeds.

- Leaves mostly 2-3 cm. broad; flowering stem unbranched 1. S. stellata
- Leaves mostly 3-5 cm. broad; flowering stem branched 2. S. racemosa

1. S. stellata (L.) Desf. Slim Solomon. Slender herb, 30-50 cm. tall; stem flexuous, with 1 or 2 membranous sheathing scales at the base, glabrous; leaves 8-12 cm. long, narrowly lanceolate or oblong-lanceolate, acute or obscurely acuminate, narrowed at the base and clasping, for the most part ascending and often folded, glabrous, sometimes glaucous; raceme simple, 3-8 cm. long, pedicels 5-12 mm. long on the same plant, curving upwards; perianth segments oblong-lanceolate, 5-8 mm. long; stamens 1/2 their length; berry 7-8 mm. in diameter, at first green, with 6 longitudinal reddish-purple stripes, becoming bright red; seeds 1-4, sordid white, 3 mm. long. (Vagnera stellata Morong).

Common throughout our region in rich shaded bottoms and moist woods, 2500-4500 ft. or more; frequent in meadows where glaucous forms occur, their leaves usually semaphore-like.

2. S. racemosa (L.) Desf. Fat Solomon. Rather coarse herb frequently 1 m. tall; stems elongated with membranous, sheathing scales below, pubescent above; leaves 10-15 cm. long, ovate or oval to oblong or lanceolate, acuminate, rounded at the base and clasping, sparingly pubescent; racemes often compound, pubescent, 5-10 cm long; pedicels 1-3 mm. long; perianth segments 2-2.5 mm. long, oblong, stamens 1/2-1/3 longer; style subequal to the segments; berry 4-5 mm. broad, flesh color sprinkled with bright red dots, becoming red throughout; seeds 1-2, subglobose, sordid white, 3 mm. long. (S. amplexicaulis Nutt.; Vagnera amplexicaulis Greene).

Frequent in shaded open woods, 2500-6000 ft.; commonly solitary.

leafy. 8.

and

Streptopus Michx. Twisted Stalk.

Stems erect, branching or simple from horizontal rootstocks. Leaves sessile or clasping, broad. Flowers axillary, commonly solitary in our species, on slender curving peduncles. Perianth segments 6, distinct, equal, recurved, deciduous, more or less keeled. Stamens 6, attached at the base of the perianth filaments, flattened; anthers sagittate, extrorse. Ovary 3-chambered, style 3-cleft or entire. Fruit an ovoid or globose red berry. Seeds longitudinally wrinkled, curved.

o Stems branching, commonly a meter tall;
4 flower and fruit pedicels with a joint in the middle 1. S. amplexifolius

o Stems simple, 10-40 cm. tall; pedicels without
4 a joint

2 Leaves 6-8 cm. long; stems 30-40 cm. long 2. S. curvipes

½ Leaves 3-5 cm. long; stems 10-20 cm. long 3. S. brevipes

1. S. amplexifolius (L.) D. C. Twisted Stalk. ~~Rootstock horizontal,~~ stem erect, 1-1.5 m. tall, branching, strigose-glandular near the base, glabrous and glaucous above; leaves 8-12 cm. long, oval, ovate or broadly lanceolate, shortly acuminate, rounded at the base, cordate, ~~and wholly clasping,~~ glabrous on both surfaces, the upper dull, the lower glaucous; flowers pendulous, ~~commonly solitary in the axils~~ on slender jointed pedicels 2-3 cm. long, the joint toothed; perianth 10-12 mm. long, greenish white, the segments narrowly lanceolate, ~~equal, distinctly keeled, recurved~~; stamens 4.5 mm. long, anthers somewhat longer than the filaments, acuminate into a short appendage; style somewhat shorter than the perianth, entire; berry 8-10 mm. long, ~~ovoid~~ at first green and white, triangular in cross-section, becoming orange, then a bright red; seeds cream-color, 3-3.5 mm. long, tapering.

Along shaded streams throughout our range, from 2500-6000 ft.

2. S. curvipes Vail. Roots densely fascicled at the nodes, stem erect, unbranched, 30-40 cm. tall, glabrous or sparingly scabrous with a few short, glandular hairs; leaves 6-8 cm. long, in general oblong-lanceolate, shortly acuminate, rounded at the base, cordate, glabrous, the margin with a few short glandular hairs; flowers pendulous, pedicels unjointed, about 1 cm. long; perianth 7-8 mm. long, rose-colored, segments narrowly elliptical; stamens 4 mm. long, the anthers shorter than the filaments, acuminate into a forking appendage; style somewhat shorter than the perianth, 3-cleft; berry 8-9 mm. in diameter, flattened at the apex, bright red; seeds cream-color, 2 mm. long, tapering.

To be expected in the northern part of our region, the type from 4400 ft. on Asulkan Pass, B.C.

3. S. brevipes Baker. Stems slender, 10-20 cm. long, somewhat angled, glabrous, from slender white rootstocks, the roots fascicled at the nodes; leaves commonly 5 or 6, the uppermost half the size of the lowermost, 3-5 cm. long, elliptical or lanceolate, acute or slightly acuminate, prominent veins 3; flowers usually 2 or 3, pendulous, the pedicels 8-10 mm. long, slender and curving, unjointed; perianth rose-colored, rotate, the segments keeled, 2-2.5 mm. long, strongly recurved; stamens 1.5 mm. long, anthers shorter than the filament, abruptly acuminate at the apex, style very short; berry glossy red, 7-8 mm. in diameter, slightly flattened at the apex; seeds 2.5 mm. long. (Kruhsea streptopoides Kearney).

Mature or nearly mature dry woods in thick duff, frequently forming large patches, infrequent but abundant locally; throughout our range from 3500-4000 ft. Upper Priest R., 3000 ft., Epling 5733; Orogrande Cr., 3000 ft., Epling and Houck 9395.

45. Saussurea DC.

Perennial herbs with alternate sharply denticulate leaves. Heads discoid, few, borne in terminal commonly flat-topped cymes. Involucres top-shaped, consisting of several series of closely overlapping somewhat chaffy bracts; receptacle flat, sparingly chaffy with stiffish subulate bracts. Flowers bluish-violet. Achenes narrowly cuneiform, angled, crowned with a double row of pappus-bristles, the outer short, unequal, merely barbed, the inner several times longer, plumose.

1. S. americana D.C. Eaton. ——→ Stems erect, 80-150 cm. tall, thinly cobwebby; basal leaves ovate, their blades 10-12 cm. long, 4-6 cm. wide, truncate or subcordate at the base, obtuse, borne on winged petioles 2-3 cm. long, 4-6 cm. wide, truncate or subcordate at the base, obtuse, borne on winged petioles 2-3 cm. long, the upper leaves ~~similar but~~ → more lanceolate, acute, cuneate at the base and sessile, the margins of all very sharply sinuate-denticulate, the lower surfaces more or less cobwebby; bracts of the involucre in 4-5 series, the outermost 3 mm. long, broadly ovate, the innermost oblong or oblanceolate, 8-9 mm. long, all ciliate towards the tips and somewhat cobwebby; flowers blue-violet, their corollas 10-11 mm. long; achenes 3.5 mm. long, glabrous, the pappus buff-color.

Common in subalpine meadows and along subalpine streams throughout our region.

46. Cirsium (Tourn.) Hill. Thistle.

Stout perennial or biennial herbs with alternate leaves which are variously spinose. Heads discoid, their involucres subglobose, bell-shaped or urn-shaped, the bracts numerous, subulate, overlapping in many series, spine-tipped, the tips frequently spreading or recurving; receptacle flat, bristly. Disc-corollas tubular, deeply 5-cleft, often showy en masse. Achenes prevailingly cuneiform, more or less flattened, bearing a single series of deciduous softly plumose bristles.

0 Upper surfaces of leaves very harsh with short rigid
4 spinose hairs; leaves decurrent upon the stems for several centimeters forming herbaceous spinose wings — 1. C. lanceolatum

0 Upper surfaces of leaves soft and smooth, cobwebby or
4 glabrous; leaves clasping the stem but not decurrent

2 Innermost series of involucral bracts 5-20 mm. long; the
6 heads 10-15 mm. broad; plants dioecious, perennial with creeping rootstocks — 2. C. arvense

2 Innermost series of involucral bracts 20-25 mm. long;
6 the heads 15-40 cm. broad; biennial plants without creeping rootstocks

4 Involucral bracts bearing a glandular ridge near
8 the tip; heads borne at the tips of slender branches 5-20 cm. long, not at all crowded; lower leaves deeply incised, the lower surfaces of all white-tomentose.

6 Flowers pink, rarely white, heads 15-20 mm.
10 broad — 3. C. undulatum

6 Flowers yellowish-white, heads 25-35 mm.
10 broad — 4. C. palousense

4 Involucral bracts not bearing a glandular ridge;
8 heads crowded in the upper axils, borne on branches 2-3 cm. long, the cluster often subtended by a leafy involucre; lower leaves shallowly lobed, the upper at least nearly glabrous or cobwebby beneath

6 Involucral bracts glabrous

8 Involucral bracts conspicuously dilated
12 and flattened at the tip — 5. C. foliosum

8 Involucral bracts hardly dilated, mostly
12 armed with a simple spine — 6. C. oreophilum

6 Involucral bracts cobwebby — 7. C. edule

1. C. lanceolatum (L.) Hill. Bull Thistle. → A stout weedy perennial 1-1.5 m. tall, the stems very leafy more or less woolly, branching above; leaves green, strongly undulate, lanceolate or narrowly ovate, 6-20 cm. long or more, deeply pinnatifid into lanceolate or oblong-lanceolate lobes, 3-6 cm. long, ~~or in the smaller leaves into deltoid lobes~~ → all tipped with rigid spines as much as 1 cm. or more long, the upper surface very harsh with stiff appressed hairs, the lower cobwebby or woolly, the margins ~~somewhat spinose but~~ → mostly smooth, all decurrent upon the stems, forming spinose herbaceous wings; heads few, 4-6 cm. in diameter, crowded, the involucral bracts linear, the inner 3 cm. long, all tipped with a short spine, thinly cobwebby, spreading above the middle; flowers rose-purple 4 cm. long, the corolla lobes linear, 7 mm. long; achenes 4 mm. long, the pappus 3-4 cm. long.

Common in waste places, along roads and in denuded burns; introduced from Europe.

2. C. arvense (L.) Scop. Canadian Thistle. → A perennial herb with matted creeping rootstocks, the slender stems thus gregarious, 1-2 m. tall, glabrous, much branched in the upper parts, ~~the branches ascending~~ →; leaves green, mostly oblong-lanceolate, 3-15 cm. long or more, pinnatifid, their segments irregularly deltoid, .5-2 cm. long, the margins spinose with numerous prickles 3-6 mm. long, undulate, glabrous or sparingly cobwebby beneath, sessile and somewhat clasping at the base; heads numerous, 15-20 mm. tall, 10-15 mm. wide, ~~arranged in corymbs at the ends of the branches~~ → dioecious, the staminate heads subglobose, the flowers much exserted, the pistillate campanulate, the flowers hardly exserted; bracts of the involucre glabrate, purplish, the outer ovate, 3-5 mm. long, the inner narrowly lanceolate, all acuminate, glabrate, the tips somewhat cobwebby and ciliate, the outermost recurving, soft, not spinose, each with a dorsal glutinous ridge; flowers lavender, 1.5 cm. long, the corolla lobes 3 mm. long; achenes 2.5 mm. long, the pappus 1-2 cm. long.

corymbose,

A frequent and pernicious weed in waste places at low elevations; introduced from Europe.

3. C. undulatum (Nutt.) Spreng. → Stems erect, branching, the branches rather slender, densely and persistently white-tomentose; leaves mostly lanceolate in outline, the lowermost broadly so or oblanceolate, the blades of the lower 15-30 cm. long, borne on petioles half as long, the upper 8-15 cm. long, sessile and clasping, all pinnately lobed, the lobes of the lower oblong in outline, 4-5 cm. long, again incised with 2 or 3 salient lobes, those of the upper leaves mostly deltoid, all armed with sharp spines 2-4 mm. long, the margins armed with smaller prickles, the upper surfaces cobwebby, frequently becoming glabrate and ashy, the lower surfaces densely and persistently white-tomentose; heads borne at the tips of the branches, not at all crowded, 15-20 mm. broad, their involucral bracts lanceolate, the inner 20-25 mm. long, all sparingly cobwebby, nearly glabrous, bearing a glandular ridge 2-3 mm. long near the apex, the tips spinose, spreading; flowers pink or whitish.

Frequent along roadways in the grassland and at lower elevations.

4. C. palousense Piper. ——→ Stems erect, branching above, 60-100 cm. tall, more or less cobwebby; lower leaves oblanceolate, 15-25 cm. long, tapering to a petiole half as long as the blade, the stem leaves sessile, and clasping, broadly lanceolate or oblanceolate below, deeply pinnatifid, the lobes narrowly oblong-lanceolate, simple or again sparingly lobed toward the base, the upper narrowly oblong-lanceolate, their lobes mostly deltoid, all spinose with weak spines 2-4 mm. long, the margins armed with smaller prickles, the upper surfaces cobwebby, becoming more or less glabrate, at least in the lower parts, the lower surface persistently white-tomentose; heads borne at the tips of slender branches, globose in outline, 3-3.5 cm. broad, their involucral bracts lanceolate, the inner 25-28 mm. long, all except the inner series tipped with spreading spines 2-3 mm. long, the inner soft and recurving at the tips, all strongly cobwebby, especially towards the base of the involucre, bearing a glandular ridge 3-4 mm. long near the apex; flowers cream-color.

Frequent along roadways in the grassland.

5. C. foliosum (Hook.) DC. ——→ Stems stout, unbranched, virgate, 40-80 cm. tall, leafy, thinly woolly; lower leaves narrowly oblanceolate, 15-25 cm. long, tapering to indefinite petioles, the upper narrowly oblong or linear, gradually diminished upwards, sessile, pinnately lobed, the lobes irregularly deltoid, 3-12 mm. tall, spinose, the margins undulate, armed with numerous weaker unequal spines, both surfaces thinly woolly with hairs 5-8 mm. long, the lower frequently somewhat cobwebby as well; heads few in a dense terminal cluster subtended by and almost hidden with a leafy cluster, the leaves of which are purplish-red beneath, giving a characteristic aspect to the plant; bracts of the involucre lanceolate, the inner 18-20 mm. long, dilated at the tip into a flattened, lacerate appendage 2-3 mm. broad, the outer tipped with weak spines 1-2 mm. long; corolla 2.5-2.8 cm. long, whitish, the lobes 5 mm. long, anthers and style rose-purple; achenes 4.5-5 mm. long.

Common in meadows at low elevations throughout our region.

6. C. oreophilum Rydb. → Stems stout, unbranched, virgate, 40-80 cm. tall, leafy, thinly woolly with hairs 5-8 mm. long; lower leaves narrowly oblanceolate, 15-35 cm. long, tapering to indefinite petioles, the upper narrowly oblong or oblong-lanceolate, gradually diminished upwards, sessile and clasping, all pinnately lobed, the lobes irregularly deltoid, 3-12 mm. tall, spinose tipped, the margins undulate, armed with smaller unequal spines, the upper surfaces very thinly villous, the lower cobwebby, or the upper leaves throughout; heads few, in a dense terminal cluster subtended by and sometimes almost hidden within a leafy cluster, the mid-portion of the narrow leaves being whitish, their bracts lanceolate, glabrous, the inner 18- 20 mm. long, all tipped with spines 2-3 mm. long; scarcely dilated at the tips; corolla yellowish, 2.5-2.8 cm. long, the lobes 5mm. long; anthers and style violaceous; achenes 4.5-5 mm. long, violaceous when maturing, the pappus white, 20-22 mm. long.

Frequent in burns in the St. Joe and Clearwater forests at elevations from 3000-5000 feet; perhaps only a variant of the following species. →

no H → Orogrande Cr., 3000 ft., Epling and Houck 9313; Forks of St. Maries R., 3575 ft., ~~1000 m.~~ → Leiberg 1188; Elk Prairie, Epling and Kempf.

7. C. edule Nutt. Indian Thistle. Stems erect, mostly unbranched, 60-200 cm. tall, thinly woolly; leaves 8-20 cm. long, 2-4 cm. wide, those of the lower parts oblanceolate, the upper either oblanceolate or narrowly oblong, clasping at the base but not decurrent, all pinnately shallowly lobed into broadly deltoid or somewhat hemispheric lobes 3-10 mm. tall, the margins spinose with unequal spines 1-6 mm. long, the upper surface becoming green and glabrate, ~~the lower more or less~~ ashy with a thin felt-like tomentum; heads few, crowded in the upper axils, frequently subtended by the upper leaves, 3-6 cm. in diameter, the outer involucral bracts foliaceous, the inner lanceolate, acuminate to rather weak prickles, the inner 2.5 cm. long, all densely cobwebby; flowers purple or sometimes whitish; achenes 4 mm. long, very smooth, the pappus 20-25 mm. long, buff-colored.

Frequent in dry burns.

the lower more or less

49. Arctium L.

Coarse biennial herbs with alternate leaves. Heads numerous, discoid, globose. Involucres bur-like, consisting of many series of overlapping subulate bracts which are appressed at the base but spreading above and hooked at the apex. Receptacle flat, bristly. Flowers rose-purple. Achenes oblong, 3-angled. Pappus of numerous short deciduous bristles.

(Hill)Bernh. Common Burdock.

1. A. minus ~~Schk.~~ → ~~Coarse~~ weedy much branched herbs 1-2 m. tall; Cap. leaves broadly ovate or cordate, the lowermost 30-40 cm. long, the upper 8-12 cm. long, all petioled, grayish pubescent beneath; heads in leafy panicles, globose, 2-2.5 cm. in diameter, bearing a cobwebby pubescence, the mature bracts appearing otherwise glabrous, the inner purplish at the apex; corollas rose purple; pappus 2 mm. long.

A weed found in waste places near dwellings; naturalized from Europe.

48. Centaurea L.

Annual branching herbs with alternate leaves. Heads discoid, their involucres subglobose or urn-shaped, consisting of several series of bracts which are closely appressed below the middle, spreading above, all more or less lacerate; flat, densely bristly. Corollas deeply 5-cleft, the marginal ones enlarged, suggesting ray-flowers but funnel-shaped, commonly sterile. Pappus of 2-3 rows of short bristles.

0 Achenes notched just above the base, thus attached laterally

2 Involucral bracts fimbriate, not spiny; flowers never yellow 1. C. Cyanus

2 Involucral bracts spine-tipped; flowers yellow 2. C. solstitialis

0 Achenes not notched , attached basally; flowers blue 3. C. repens

1. C. Cyanus L. Corn Flower, Bachelor's Button. Herbs with slender branching stems which are more or less cobwebby; leaves linear, cobwebby; flowers various shades of pink, blue or purple or white, the marginal ones commonly 15-16 mm. long; both inner and outer involucral bracts lacerate.

In fields and waste places; naturalized from Europe.

2. C. solstitialis L. Yellow Star Thistle. Leaves decurrent on the branches; bracts of the involucre terminating in rigid yellow spines as much as 2 cm. long.

In waste places; adventive from ~~sc.~~ Europe

3. C. repens L. Turkestan Thistle. Involucres longer than broad, the bracts unarmed, the flowers all similar.

In waste places; adventive from ~~sc.~~ Europe.

Idaho

V

PP 864, 882, 865-867, 877-878,
868-876, 879-881, 1020-1029, 1046-7,
1041-1043, 1048-1058, 1030-1040, 1045,
1022-1029, 883-887, 1058-1080, 999-1019,
888-998, 1081-1122.

II. Monocotyledones. Monocotyledons.

Plants herbaceous in our region. Leaves with parallel veins. Vascular bundles irregularly distributed throughout the ground parenchyma of the stele, not forming a cylinder. Flower parts usually in 3's, with or without a showy floral envelope. Embryo with one cotyledon, the first leaves of the seedling alternate.

9.

68. Disporum Salisb. Fairy Bells.

Erect, leafy, branching herbs from slender rootstocks. Leaves alternate, sessile and clasping. Flowers white, in terminal pairs, pendant. Perianth deciduous, the segments equal, slender, spreading but little. Stamens 6, attached to the receptacle, anthers extrorse. Ovary 3-chambered, style subequal to the stamens, entire or shallowly 3-cleft. Fruit a globose or oval berry; ~~the~~ seeds cream colored, commonly 2 in each chamber.

4 { o Leaves mostly ovate, tapering beyond the middle to an acute or lightly acuminate apex; styles 3-lobed at the apex; fruit distinctly papillose — 1. D. trachycarpum

4 { o Leaves mostly oblong, abruptly acuminate; style nearly or quite entire; fruit smooth or lightly hairy, not papillose — 2. D. oreganum

1. D. trachycarpum (Wats.) Benth. & Hook. Stems 30-60 cm. tall; mature leaves 6-10 cm. long, ovate, acute, or somewhat acuminate, pubescent when young, glabrescent and shining; principal veins commonly 6-8; perianth 10-12 mm. long, narrowly campanulate, the segments narrowly oblong or oblanceolate; stamens somewhat surpassing the perianth, the anthers 3-3.5 mm. long; style 3-lobed at the apex; berry orange-red, then carmine, flattened-globose, 3-lobed, papillose; seeds white, subglobose, 3 mm. in diameter. (D. majus (Hook.) Britton).

Occasional throughout our ~~range~~ on moist slopes or ledges, 3000-5000 ft. Lake View; Kaniksu For.; Priest R. Exp. Sta., 3000 ft.; Upper Priest R., 3000 ft.; Pritchard; St. Joe R. 3000 ft.; Wallace, 3000 ft.; Haydon Lake.

Trilliaceae. Wakerobin family.

Perennial herbs with simple stems from stout tuberous rootstocks, sheathed at the base with several scales, bearing a whorl of 3 broad, usually ovate, net-veined leaves at the summit. Flower solitary, pedunculed or sessile in the whorl of leaves. Outer whorl of perianth green, persistent in fruit, the inner petaloid, withering and deciduous. Stamens 6, erect, the anthers longer. Ovary 3-6 lobed; styles 3, stigmatic along the inner surface. Fruit a rather fleshy capsule. Seeds ovoid.

1. Trillium L. Wake Robin.

Characters of the family.

○ Flowers stalked; leaves sessile	1. T. ovatum
○ Flowers sessile; leaves petioled	2. T. petiolatum

1. T. ovatum Pursh. Stems 10-40 cm. tall, bearing a whorl of 3 ovate or rhomboidal-ovate spreading leaves, 5-20 cm. long, shortly acuminate; flower on a peduncle 2-5 cm. long; calyx lobes narrowly oblong-lanceolate, obtuse or acute, spreading, 2-5 cm. long; corolla white, fading pink, the segments in general ovate-lanceolate, somewhat exceeding the sepals; stamens erect, somewhat longer than the pistil, the anthers 8-12 mm. long, about twice the length of the filaments; pistil green, the three distinct stigmas subequal to the globose ovary; capsule becoming magenta color, broadly ovoid, incompletely 3-chambered, 1-2 cm. long, erect, dehiscing in the upper half, the angles elevated; seeds brown, 2 mm. long. (T. Scouleri Rydb.).

Common in shaded rather open woods, 2000-6000 ft.; more abundant in the northern [illegible].

Iridaceae. Iris Family.

Perennial herbs with creeping rootstocks. Leaves narrow, stiffish, erect, 2-ranked. Flowers perfect and regular (in ours), subtended by spathe-like bracts; perianth segments 6, convulute in the bud, withering persistent, petaloid, similar or differentiated into two unlike whorls, the tube adherent to the ovary. Stamens 3, inserted opposite the outer segments; anthers extrorse. Ovary inferior, 3-chambered; style 3-cleft; fruit a 3-chambered loculicidal capsule, commonly 3-lobed in cross-section.

Rootstocks well developed; flowers showy, the outer and inner perianth-segments differentiated — 1. Iris

Rootstocks short, the stems appearing tufted, flowers small, the perianth-segments all similar — 2. Sisyrinchium

//.

*. Calochortus Pursh. Mariposa ~~Tulip~~. Lily.

Low herbs with slender flexuous stems arising from membranous-coated corms. Leaves linear-lanceolate, the cauline clasping, alternate. Flowers showy, few, terminal; perianth deciduous, the segments 2-seriate, the inner petal-like, obovate, each with a and decorated more or less conspicuous gland near the base, the outer lanceolate, sepal-like. Stamens 6, inserted at the bases of the segments; anthers basifixed. Stigmas sessile, persistent on the fruit. Fruit a leathery capsule, 3-angled, or 3-winged, nodding.

o Basal leaves as long as or longer than the flowering
4 stem; gland covered with a fringed scale — 1. C. elegans

o Basal leaves shorter than the flowering stem; gland
4 { variously covered with hairs but not with a
{ fringed scale

2 Flowers cream-color or white, the anthers attenuate
6 to a distinct mucro — 2. C. apiculatus

2 Flowers purple or lavender with a purple band;

6 anthers blunt

4 Petals rounded-truncate at the apex, not

8 pointed; capsule oval, strongly winged 3. C. ~~nitidus~~ douglasianus

4 Petals abruptly pointed at the apex; capsule

8 linear-oblong, not winged 4. C. macrocarpus

1. C. elegans Pursh. Cat's Ear. Stems slender, graceful, dainty, 5-30 cm. tall, the corm ovoid, .8-1.5 cm. in diameter; leaves exceeding the stems, 3-8 mm. wide, rather glaucous; bracts 1-3 cm. long, narrowly lanceolate or linear, ascending; flowers several, on very slender pedicels 1-4 cm. long; sepals 10-15 mm. long, ovate to lanceolate, boat-shaped, greenish or whitish, mottled with purple inside, the petals elliptical, oval or ovate, 15-20 mm. long, recurving above the middle, white, purplish or blue towards the base, the gland covered with a crescent-shaped fringed scale 3-4 mm. wide, surmounted by long slender hairs; stamens 8 mm. long, the anthers pale blue, about 5 mm. long including the acuminate tip; capsule 1.5-2 cm. long, oblong-elliptical in outline; seeds straw-color, ovoid but flattened and curving, 3 mm. long.

Occasional on partly shaded subalpine slopes and ridges, but occurring in woods as low as 2000 ft. Type coll. by Lewis opp. Tim route present town of Kamiah, ~~Ida.~~

var. selwayensis (St. John) Owenby, with gland nearly straight and shorter, and petals only moderately bearded, does not seem to be geographically isolated but occasional over our range.

2. C. apiculatus Baker. Star Tulip. Stems 20-40 cm. tall, arising from ovoid corms 1-1.5 cm. in diameter; leaves shorter than the stems, 7-15 mm. broad; bracts 1-4 cm. long, lanceolate, erect; flowers solitary or several, in two umbels in vigorous plants, erect, on slender pedicels 3-6 or 10 cm. long; sepals lanceolate or elliptical, greenish becoming dull white and petaloid, 15-25 mm. long; petals dull white or cream color, 20-30 mm. long, rhomboidal, rather widely spreading, recurved in the upper half, very obtuse, sprinkled on the inner surface with long yellow hairs;

gland covered with blue-black hairs; anthers 7-12 mm. long, strongly acuminate; capsule oblong-elliptical, 2-3 cm. long, strongly winged.

Dry open ground usually in association with Douglas fir; seen only in the north; type taken in region of Lake Pend Oreille ~~hills~~. Priest Lake; Hayden Lake; Priest R. Exp. Sta., 2700 ft.; Lake Pend Oreille, 2000 ft.; Farmington Landing; Fox Creek; Hope; Roman Nose Mt.

3. C. ~~nitidus Dougl.~~ Douglasianus Schultes f. Mariposa Tulip. Corm subglobose, 2 cm. in diameter, coats thin, minutely reticulate; stem erect, 30-60 cm. tall, the leaves 2, shorter than the stem, 12-15 mm. broad, glaucous; flowers 1-3 in an umbel, bracts 4-5 cm. long, subequal, ascending, pedicels 5-8 cm. long; calyx lobes lanceolate, 3-4 cm. long, 8-10 mm. wide, spreading, scarious-margined, acuminate, greenish, lavender-tinged; petals 3-5 cm. long, erect, obovate, rounded-truncate above, erose, lavender or rose, fading bluish, whitish below, the gland transverse, 5-6 mm. broad, surmounted by an area of dense short glandular hairs, these inturn surmounted by a lunate fringe of yellow hairs, the surface of the petals with long purple or whitish hairs 8-10 mm. long; stamens 15-20 mm. long, filaments subulate, anthers 10-12 mm. long, tapering upwards somewhat but obtuse; capsule strongly winged, oval in outline, about 2.5 cm. long with short recurved styles. (C. pavonaceus Fernald) 4. ~~nitidus Dougl.~~

Roadsides and open ground below 3000 ft.; abundant on north slopes of Clearwater Canyon near Orofino. Owenby (1940) finds this to be a tetraploid, while C. nitidus is a diploid species.

4. C. macrocarpus Dougl. Corm ovoid, covered with a few stiffish scales, 1.5-2 cm. in diameter; stem erect, 30-60 cm. tall, the leaves several, linear, 5-15 cm. long, 3-5 mm. wide, somewhat sheathing at the base, recurving, soon withered; flowers 1-3 in an umbel, bracts 5-8 cm. long, ascending, leaflike, pedicels 4-12 cm. long; calyx lobes lanceolate, 4-5 cm. long, acuminate, scarious margined, the midrib green, the margins

lavender-tinged; petals 3.5-6 cm. long, ascending or slightly spreading, obovate-rhomboidal, abruptly acuminate at the apex, lavender on the outer surface, midrib green, inner surface purple, the gland shaped like a glover's knife, 4-5 mm. in diameter, densely covered with club-shaped hairs which are shortly branched at the tip, surrounded by a few longer yellow hairs, surmounted by a transverse purple streak; stamens 20-22 mm. long, the anthers and filaments subequal; capsule linear-oblong, ridged but not winged, about 5 cm. long, with persistent two-lobed stigmas; seeds very flat, oval, 3.5 mm. long, surrounded by a thin loose testa.

Dry hills, commonly in loose soil; Post Falls, Weissners Peak. The var. maculosus (Nels. & Macbr.) Nels. & Macbr., with a prominent reddish-purple crescent above the gland, is a local well-marked color phase of Nez Perce Co., the type from near Lewiston (Henderson 2727).

12.

4. Lilium L. Lily.

Erect glabrous unbranched herbs from scaly bulbs. Leaves alternate and whorled, sessile. Flowers showy, racemose; perianth deciduous, its segments rather fleshy, subequal, distinct, recurved above the middle, each with a nectar-bearing groove near the base. Stamens 6, included, the anthers versatile. Style deciduous, the stigma 3-cleft. Capsule loculicidal; seeds brown, very flat, horizontally arranged in two rows in each locule.

1. L. columbianum Hans. Tiger Lily. Bulb ovoid, 4-5 cm. in diameter, the scales lanceolate, acute, appressed; stems erect, 1-1.5 m. tall, the principal leaves in whorls of 7-8, narrowly oblong-lanceolate, or elliptical,

10-12 cm. long, 1.5-2.5 cm. wide, all acute, or shortly acuminate; racemes 1-several flowered, the pedicels 8-25 cm. long in fruit; flowers nodding, bright orange dotted with purple, the segments 4-6 cm. long, 8-15 mm. wide, lanceolate, acute, narrowed at the base; stamens 3-4 cm. long, the filaments slender, anthers 6-9 mm. long, yellow; ovary very slender, 1.5-2 cm. long, narrowed below the middle, capsule erect, oblong, 3-4 cm. long, 1.5-2 cm. wide, narrowed at the base, truncate or rounded at the summit, 3-lobed; seeds 4-7 mm. in diameter, wing-margined, light brown.

Common in burns and open places, below 3000 ft., rarely in forest; observed chiefly north of the Coeur d'Alene R.; not seen in the Clearwater Forest.

13.
Fritillaria (Tourn.) L. Fritillary.

Erect glabrous unbranched herbs with scaly bulbs, commonly bearing grain-like bulblets. Leaves alternate and whorled, sessile. Flowers showy, nodding, commonly several in a short raceme or solitary, leafy-bracted. Perianth deciduous, its segments rather fleshy, subequal, distinct, not recurved, each with a nectar-pit at the base. Stamens 6, included, the anthers basifixed. Style deciduous, simple or 3-cleft. Capsule loculicidal. Seeds brown, flat, horizontally arranged in two rows in each locule.

4 / Style 3-cleft; perianth segments 25-35 mm. long, dark purple, mottled with greenish yellow; leaves lanceolate — 1. F. lanceolata

1 / Style entire, stigma 3-lobed; perianth segments 10-20 mm. long, yellow or orange, tinted with purple; leaves narrowly oblong — 2. F. pudica

1. F. lanceolata Pursh. Checker Lily. Bulbs flattened globose, 1-1.5 cm. in diameter; stems 40-60 cm. tall, more or less purple tinged; leaves 2-5, the uppermost solitary, 5-10 cm. long, 8-15 mm. wide, lanceolate, acute, the first leaf oval or ligulate, the blade 8 cm. long, 2.5 cm. wide, on a slender petiole about as long; flowers solitary or several, on pedicels 1-3 cm. long, nodding; perianth segments narrowly oblong-elliptical or lanceolate, obtuse, 25-35 mm. long, deep brownish purple, mottled with greenish yellow; each with a conspicuous, green, lanceolate gland in the hollow; stamens about half the length of the segments, the filaments slender, anthers 3.5 mm. long; style branches 8 mm. long recurving; capsule squarish in outline, 1.5-2 cm. long, 2-2.5 cm. wide, transversely rugose, the angles winged, the wings 1-3 mm. wide; mature seeds not seen.

Stream and lake margins below 3000 ft. The bulb is said by Lewis to have been eaten by the natives and called tel-lah-thil-pah.

2. F. pudica (Pursh) Spreng. Yellow Bell. Bulbs flattened globose, about 1 cm. in diameter; stems 20-30 cm. tall, or less, more or less purple tinged; leaves mostly alternate, frequently paired, linear-oblong or oblanceolate, obtuse, 5-7 cm. long, 5-8 mm. wide; flowers solitary, sometimes 2, nodding on peduncles 3-5 cm. long, campanulate, perianth segments yellow or orange usually with a tinge of purple, 15-20 mm. long, oblanceolate, obtuse or rounded, the gland obscure; stamens 2/3 the length of the segments, the filaments slender, anthers yellow, 5.5 mm. long; style shorter than the stamens, obscurely 3-lobed at the apex; capsule erect, subglobose, about 1 cm. in diameter, not winged; seeds obovate-cuneiform, 7 mm. long, a rich brown, shining, margined.

Grassy foothills; hardly proper to our region; ~~acc. to~~ Lewis, ~~who took the type coll.~~ on the Clearwater R., the bulb was eaten by the natives.

6 Erythronium L. Dog-tooth Violet.

Low glabrous herbs, the leaves 2, apparently basal, from deep-seated membranous coated corms. Flowers showy, solitary, or several, terminal, nodding. Perianth segments distinct, deciduous, equal, the inner auricled at the base. Stamens 6, hypogynous, about half the length of the perianth, basifixed. Ovary 3-chambered. Style filiform, 3-cleft. Fruit a somewhat 3-angled, loculicidal capsule. Seeds ovate, wrinkled.

O Perianth segments yellow, whitish at the base — 1. E. grandiflorum

O Perianth segments white, or greenish, yellow towards the base — 2. E. idahoense

1. E. grandiflorum Pursh. Dog tooth Violet. Corms ovoid; leaves 10-20 cm. long, oblong, lanceolate, obtuse or acute, attenuate at the base to a margined petiole 2-5 cm. long, dark-green, not mottled; scapes one or very rarely more, 15-25 cm. tall or more, elongating to 30 cm. in fruit, erect; perianth 1.5-4 cm. long, bright yellow but whitish at the base, segments narrowly lanceolate, acuminate, the inner with 4 saclike appendages; stamens 12-15 mm. long, the anthers yellow or purple or white in the same community, style somewhat longer than the stamens; capsule 3-3.5 cm. long, oblong-oblanceolate, obtuse at the apex, attenuate to a short stalk at the base.

On hillsides with north exposure, locally abundant.

2. E. idahoense St. John & G. N. Jones. Corm ellipsoid or narrowly cylindric, brown coated, with (a) slender rhizomatous process up one side; leaves green, unequal, oblanceolate with an acuminate tip, the larger blade 7-13 cm. long, 2.5-4.5 cm. wide, the channelled petioles about half the length of the blade; perianth segments greenish or creamy white, marked for the lower cm. with yellow within and green or greenish-yellow without, 3-4.5 cm. long, 9-12 mm. wide, lanceolate, recurved after anthesis,

the inner three segments slightly broader and with four saccate basal unfoldings; stamens either with six short anthers 5-7 mm. long or 3 short and 3 long, 10-20 mm. long, these two conditions in flowers on the same stem, or all six stamens long; anthers white, turning pale yellow after dehiscence or pinkish, filaments 10-12 mm. long, usually equal; style clavate at the tip, the stigmas distinctly parted and recurved; fruit oblanceolate, trigonous.

Apparently general in early spring in lowland of Kootenai and Latah cos.; kn. to us only from the type coll. made near Worley, St. John et al. 3719; Piper recognized this as a color phase (var. candidum) of E. grandiflorum.

15

7. Camassia Lindl.

Herbs from membranous-coated bulbs. Leaves linear, basal. Scapes erect; flowers in simple racemes, showy. Pedicels jointed at the base of the flower, each subtended by a membranous bract. Perianth segments 6, distinct, equal, withering-persistent. Stamens adhering to the bases of the segments; anthers versatile. Style filiform, persistent at the base; stigma 3-cleft. Capsule loculicidal, 3-lobed in cross-section. Seeds black, polished.

1. C. quamash (Pursh) Greene. Camas. A showy beautiful perennial herb, the bulbs 1-3.5 cm. in diameter, globose or ovoid, tapering, erect, the coats dark brown or black, rather glossy; leaves often glaucous on the inner surface, 15-50 cm. long, 8-20 mm. wide, tapering, acute, the veins prominent; scape slender, 20-90 cm. tall; flowers 10-25 or more, pale blue, ~~azure (or violet)~~ on ascending pedicels 6-12 mm. long, the bracts soon papery, twice as long as the pedicels or more, often bluish; perianth clearly zygomorphic, its segments 15-35 mm. long, 4-8 mm. wide, acute at the apex, acuminate and inrolled at the base, the principal vein blue and prominent; stamens 2/3 the length of the segments, their anthers 5 mm. long, yellow, the filaments bluish; ovary greenish-yellow; capsule oval or subglobose in outline, 1-1.5 cm. in diameter, the valves transversely wrinkled; seeds narrowly ovoid, 3 mm. long, black and shining, resembling minute dried prunes. (Quamasia quamash Cov.).

Occasional in meadows and open gravelly places at lower elevations especially southward; locally abundant and very striking en masse. The plants as described above grow near Weippe, the type locality. The plants of drier habitats, such as Santa, with dark blue or violet flowers and clawed perianth segments have been segregated by St. John as C. Teapeae.

2. T. petiolatum Pursh. Stems several, 5-10 cm. tall, with a whorl of three rather fleshy leaves, the blades exactly ovate to nearly orbicular, 6-15 cm. in diameter, sometimes lightly cordate at the base, the petioles 3-12 cm. long; flower sessile between the leaves, the sepals green, 2-6 cm. long, 4-15 mm. wide, oblong, rather obtuse, petals deep brownish purple; stamens 12-25 mm. long, the filaments rarely more than 6 mm. long; the ovary subglobose 4.5 mm. long, the recurving purple stigmas twice as long; capsule ovoid, 2.5 cm. long, becoming reddish; seeds ovate, 3.5 mm. long, smooth.

Infrequent at low elevations in association with yellow pine or Douglas fir. Lolo Trail on or near Collins Cr., M. Lewis (type); Coeur d'Alene R., Geyer 291; Spirit Lake, Epling; Fernan Lake, Christ 34.

Amaryllidaceae. Amaryllis Family.

Herbs ~~with~~ which arise from tunicated bulbs, the coats of which are generally thin and membranous. Leaves basal, linear, with parallel veins. Flowering stems scape-like, bearing several flowers in ~~a umbel~~ an umbel, subtended by two or more membranous bracts. Perianth segments similar, in two series, both petaloid, but the inner sometimes somewhat differentiated, all nearly distinct, or joined into a tube. Stamens 6, opposite the perianth segments and more or less adherent to them or to the tube. Ovary superior (or inferior), 3-chambered. Fruit a capsule. Seeds more or less ovoid, often angled.

Perianth segments nearly distinct; herbage usually with the odor of onions; bracts usually two

1. Allium

Perianth segments joined to form a short tube; herbage without a marked odor; bracts usually several

2. Tritelea

1. Allium L. Onion.

characteristically strong scented

Low herbs with usually narrowly linear leaves which arise from ovoid bulbs covered with a few thin coats, which under a lens are variously marked. Flowers on a slender scape in a terminal simple umbel subtended by usually two membranous bracts, pedicels not jointed. Perianth persistent, becoming papery, its segments subequal, joined at the very base. Stamens 6, ~~about~~ equal to the perianth the filaments filiform but dilated at the point of insertion on the perianth. Style filiform. Fruit a capsule.

D Leaves hollow, columnar; umbel dense, the pedicels 4 usually equal to or shorter than the flowers — 1. A. sibiricum

D Leaves solid, flat or channelled along the upper 4 surface; pedicels longer than the flowers

2 Outer bulb coats broken into numerous brown fibers — 2. A. Geyeri

2 Bulb coats all papery, not fibrous

4 Flower cluster nodding to one side; bulbs ovoid, 8 tapering gradually into a neck 1-2 cm. long or more — 3. A. cernuum

4 Flower cluster erect; bulbs subglobose or if 8 ovoid, abruptly narrowed

6 Stamens purple, exserted beyond and longer 10 than the perianth; bulb coats without reticulations — 4. A. bicentrum

6 Stamens yellow, shorter than the perianth 10 segments, not exserted; outer bulb coats with reticulations visible under a lens

8 Perianth segments white or pale rose, 12 7-8 mm. long; reticulations in outer bulb coats strongly contorted — 5. A. fibrillum

8 Perianth segments pink, veined with 12 purple, 8-10 mm. long, recurved; bulb reticulations rectangular — 6. A. cuspidatum

not reticulate

1. A. sibiricum L. Wild Chives. ⟶ Bulbs slender and lanceolate, commonly 7-8 mm. in diameter, usually on a short rootstock, the coats membranous, white, ~~unmarked with reticulations~~; leaves 20-30 cm. long, hollow, columnar; scapes rather stout, hollow, about as long as the leaves; bracts 2, ovate, acute, 1-2 cm. long; umbel erect, dense, 20-40 flowered, pedicels about as long as the perianth or less; perianth pale rose-color, segments 10-12 mm. long, ~~joined at the base~~ ⟶ oblong-lanceolate, abruptly narrowed at the tip, midvein conspicuous; stamens about half the length of the perianth, filaments strongly dilated at the base; style about equal to the stamens; capsule 4-5 mm. long; seeds 2.5-3 mm. long, angled, dull.

Sandy stream bottoms below 3000 feet, chiefly north of the Coeur d'Alene River.

2. ⟶ A. Geyeri Wats. ⟶ Bulbs ovoid, tapering, clustered, 1-1.5 cm. in diameter, the outer coats very fibrous and matted, dark; leaves 30-40 cm. long, flat, 2-3 mm. wide; scapes slender, about as long as the leaves; bracts 2, ovate or lanceolate, partially joined; umbel erect, 20-30 flowered, pedicels about twice the length of the perianth; perianth rose-colored, its segments ovate, acute, 8-9 mm. long; stamens somewhat shorter; style 2 mm. long; capsule flattened-globose, 2.5 mm. in diameter, 3-lobed, each valve bearing two short pronglike crests; seeds 2 mm. long.

In springy soils along brooks; granite ledges, lake shores (Leiberg); the onion of the Nez Perce Indians, called by them "omoir" Clearwater R. ~~is~~ the type locality (Geyer 226 ~~at Gray Herb.~~), Kootenai Co.; Lake Coeur d'Alene, 2100 ft.; Sunnyside.

3. A. cernuum Roth. Bulbs narrowly ovoid or lanceolate, usually clustered, about 1 cm. in diameter or less, the coats membranous, white or purplish, [illegible]; leaves 20-30 cm. long, flat, 2-4 mm. wide, scapes slender, longer than the leaves, bracts 2, shorter than the flowers, deciduous; umbel lax, recurved and nodding, 20-40 flowered, the pedicels very slender 10-15 cm. long; perianth white to rose-color, the outer segments 5-6 mm. long, broadly ovate, obtuse, forming a shallow cup, the inner segments erect, similar; stamens 8 mm. long, filaments abruptly expanded at the very base; capsule 3-lobed, each valve with 2 prong-like appendages at the apex; style nearly equal to the perianth; capsule 4-5 mm. long, seeds about 3 mm. long, angled, dull; the prongs 1-1.5 mm. tall;

Rocky lake shores below 3000 ft.; not common. Upper Priest Lake; Priest Lake; Hope.

4. A. biceptrum Wats. Bulbs globose or ovoid, erect, 1.5-2 cm. in diameter, the outer coats dull red when fresh, without apparent reticulations, the inner shining; leaves commonly 2, 10-30 cm. long, 5-10 mm. broad, somewhat glaucous, deep reddish-purple towards the base; scapes 15-40 cm. tall, longer than the leaves; bracts scarious, subrotund, abruptly acuminate, 10-20 mm. long; pedicels slender, 12-15 mm. long; umbels subglobose; perianth segments rose-purple (or white), each distinct, appearing as though in one series, ascending, 6-8 mm. long, lanceolate or ovate-lanceolate, nearly straight above the middle, narrowed toward the base and somewhat gibbous, entire; anthers dark purple, exserted, the filaments joined to form a short disc; crests 6, rosy, 0.5 mm. tall; capsule globose, 5 mm. tall; seeds 2.5 mm. long.

Abundant locally on rock outcrops in the southwestern part of our region. Troy; Clearwater canyon.

5. A. fibrillum Jones. ——→Bulbs solitary, 1-1.5 cm. in diameter, globose, covered with a few thin coats in which the reticulations are very narrow and much contorted; leaves 10-30 cm. long, flat, 2-3 mm. wide; scapes slender, about as long as the leaves, bracts 2, 1 cm. long or less, ovate or lanceolate, acute; umbel erect, 10-25 flowered, pedicels somewhat longer than the perianth; perianth 7-8 mm. long, segments white or rose, lanceolate, acute, subequal, joined at the very base; stamens and style about half the length of the perianth; capsule 3-lobed, not crested; seeds pyriform-globose, 2 mm. long, dull black, lightly rugose.

In rocky gravelly ground in thin soil. Along St. Maries R. 3000 ft.; near Stevens Peak, 5200 ft.; Upper Potlatch R.; Santa.

6. A. cuspidatum (Fern.) Rydb. ——→Bulbs 12-15 mm. in diameter, depressed-globose, the outer coats brownish, the veins raised into minute rectangular reticulations ~~visible under a lens~~, the inner dull white; leaves commonly 3, 8-15 cm. long, channelled on the upper surface, 2.5-3 mm. wide; scapes 10-25 cm. tall, reddish-purple; bracts 2, broadly ovate, 1.5-2 cm. long, mostly acuminate towards the apex; pedicels 10-15 mm. long; perianth segments rather fleshy, in two distinct series, 8-10 mm. long, pink, veined with purple, all abruptly acuminate near the apex and recurved; stamens 7-8 mm. long, their filaments white, ~~dilated at the base~~→ their anthers yellow; ovary yellow, obscurely 6-lobed, not crested; capsules not seen. (A. acuminatum var. cuspidatum Fern.).

Dry gravelly ridges near Viola; Moscow; Worley.

2. Triteleia Dougl.

Herbs arising from ~~corms~~ bulbs and thickened, the coats straw-colored. Leaves basal, linear. Scapes erect, slender. Flowers showy, in an open umbel, subtended by several membranous bracts. Perianth campanulate, the segments subequal, joined at the base to form a tube commonly subequal to the limb. Pedicels jointed beneath the perianth. Stamens 6, adherent to the perianth tube, the anthers versatile. Stigma not evidently lobed. Fruit a subglose capsule, the persistent style splitting with the valves.

Flowers white or lilac with a green midvein; stamens in a single series, the filaments broadly dilated and joined at the base — 4 — 1. T. hyacinthina

Flowers purple, veined with blue; stamens in two series, nearly sessile, not joined — 4 — 2. T. grandiflora

1. T. hyacinthina (Lindl.) ——→ Wild Hyacinth. Bulb ~~Corms~~ 1-2 cm. in diameter, subglobose but flattened vertically, the outer coats coarsely fibrous-reticulate, the inner membranous but strongly veined; leaves 30-40 cm. long, 7-8 mm. wide, tapering; flowers white or lilac with greenish mid-veins, on pedicels 1-3 cm. long, bracts shorter than the pedicels, ovate to lanceolate-acuminate; perianth segments ~~9~~ 8-10 mm. long, oval, obtuse; stamens joined at the base, forming a cup 5 mm. long, the filaments broadly expanded, 2.5 mm. broad, attached to the perianth cup in the lower half in one series, anthers divergent at the base, yellow; capsule about 5 mm. in diameter, globose, narrowed below to a stipe 2-5 mm. long; seeds oblong-oval, 2 mm. long, black, finely reticulate. (Hesperoscordum hyacinthinum Lindl.; Hookera hyacinthina Ktze.; Brodiaea hyacinthina Baker.).

River banks and road sides usually below 3000 ft. ~~Hoover has shown the generic characters existing betw. Brodiaea, Dichelostemma and Triteleia (Bull. Torr. Club 66:165).~~

2. T. grandiflora Lindl.

Bulbs

~~Corm~~ globose, flattened, about 1.5 cm. in diameter, the coats fibrous-reticulate, the outer dark; leaves several, 30-40 cm. long, 5-10 mm. wide, keeled, glabrous; scape erect, slender, 50-70 cm. tall; umbel commonly 8-15 flowered, the pedicels at length 2-6 cm. long; bracts several, lanceolate, veined, 1-1.5 cm. long; perianth purple, veined with blue, tubular-campanulate, rounded at the base, the tube 12-13 mm. long in flower, becoming 15 mm., the lobes spreading ~~in anthesis~~ in two ranks, oval, 1-veined, 8-9 mm. long, 4-6 mm. wide; stamens in two series, the uppermost shortly stipitate and decurrent on the inner segments, the lowermost nearly sessile at the base of the outer segments; anthers 1.5-2.5 mm. long, blue; pistil 1-1.5 cm. long, the ovary oval, the style and stipe subequal; capsule oval, 1.5 cm. long, invested by the inflated, scarious corolla; seeds oval, 3 mm. long. (Brodiaea Douglasii Wats.; Hookera Douglassii Piper).

Rocky river and lake banks below 3000 ft., rarely in forested regions. First collected on the "plains of the Columbia" by Lewis and later introduced into English horticulture by collections of David Douglas. Albany Falls, Pend Oreille R., Sprague 108; Fish Lake Cr., Epling and Kempf.

Araceae. Arum Family.

Herbs with basal leaves, the inflorescence sheathed by a leaf-like usually colored spathe. Flowers in a dense spike (spadix). Perianth of several scale-like segments or wanting. Stamens 4 or 6. Ovary 2-4 chambered. Fruit a berry.

Dis-
o Leaves linear, ~~grass~~like — 2. Acorus

o Leaves elliptical or oblanceolate, fleshy — 1. Lysichitum

1. Lysichitum Schott.

Perennial herb with basal leaves arising from a thick rootstock. Leaves large, fleshy. Spathe commonly colored, expanded above, partially sheathing the spadix. Flowers perfect, crowded into a cylindrical spike. Stamens 4, opposite the 4 perianth-segments. Ovary 2-chambered, 1 ovule in each chamber. Fruit a 2-seeded berry.

1. L. [illegible] (Pursh) Schott & St. John. Western Skunk cabbage. Leaves narrowly elliptical or oblanceolate, 30-90 cm. long or more, thickish and fleshy, often mottled with darker areas, narrowed below to a petiole 10-20 cm. long, or nearly sessile; spathe appearing before the leaves, hoodlike, yellowish; mature spadix 5-8 cm. long, 2-2.5 cm. broad, cylindrical, on a stout peduncle 10-30 cm. long or more; flowers greenish-yellow, ~~perianth 4-lobed~~, stamens and style included; fruit green, the berries loosely adherent and partially sunk in the fleshy spadix, falling apart readily when mature; seeds 6-7 mm. long, ovoid, flattened on the inner surfaces. (L. camtschatcense of Am. auth.).

Occasional in shaded muddy stream bottoms in rich soil below 3000 ft.; abundant in the creeks tributary to the west branch of the Priest R.

2. Acorus L. Calamus.

Plants of swampy ground, the leaves erect, Iris-~~grass~~like, from horizontal creeping rootstocks, partially enfolding each other at the base in two ranks. Spadix and spathe borne on a 3-angled peduncle, the spadix lateral, much exceeded by the leaflike spathe. Flowers perfect, densely crowded. Perianth with 6 segments. Stamens 6. Ovary 2-4 chambered. Fruit berry-like.

1. A. calamus L. Sweet Flag. → Rootstock trailing, 1-2 cm. thick, uneven; leaves ~~sheathing at the base~~, .5-2 cm. wide, 50-90 cm. long, glabrous; spathe ~~leaflike~~ an extension of the 3-angled peduncle or scape, keeled and sheathing the base of the spadix and extending beyond it 15-50 cm.; spadix 3.5-8 cm. long, .8-1.5 cm. thick, tapering somewhat; flowers densely crowded,

minute, the perianth segments whitish, narrowly obovate, 1.5-2 mm. long; stamens yellow, subequal to the perianth, ovary green; fruit a few-seeded berry, rarely if ever formed in our region.

Bogs near the margins of lakes or streams. Foliage and rootstocks fragrant when crushed.

Lemnaceae. Duckweed Family.

Minute alga-like aquatic plants, commonly floating on the surface of ponds and slow-moving streams and frequently forming extensive colonies. Plant body a disc-shaped, leaf-like structure, a few millimeters long, from the under side of which arise 1 or more tiny rootlets. Reproduction is commonly vegetative by "budding" whence daughter plants are formed. The flowers (rarely produced) are borne on the under side and consist of a single flask-shaped ovary and 2 stamens, surrounded by tiny sac-like spathe. Perianth none. Fruit a tiny inflated achene.

o Rootlets several, forming a bundle near the center on
4 the lower side of each "frond", ~~red beneath~~ — 1. Spirodela
o Rootlets solitary from each "frond", ~~green beneath~~ — 2. Lemna

As the name indicates the Duckweeds are of considerable economic importance as duck food. Their habit in northern climates of sinking to the bottom of the body of water on which they are growing at the approach of cold weather while remaining afloat in warmer climates is of further biological interest as a factor in wild fowl migrations.

1. Spirodela Schleid.

Plant body disc-shaped. Rootlets several, fascicled, arising near the center, each with a single strand of vascular tissue. Reproductive pouches 2, near the base of the frond. Spathe sac-like; inflorescence of 1 pistillate and 2 staminate flowers. Fruit rounded-lenticular, the margin winged.

1. S. polyrhiza (L.) Schleid. Greater Duckweed. Fronds obovate in outline, 3-10 mm. long, green on the upper surface, faintly 5-12, mostly 7-veined, purplish beneath; rootlets commonly 5-8; rootcap conspicuous, acute.

Fronds commonly forming small colonies, frequently aggregated into larger areas on the surface of quiet water. Nearly stagnant pools below 3000 ft., forming a very characteristic yellow-green, dry-looking scum. Clarkia, Epling and Offord 8254.

(frond)

2. Lemna L. Duckweed.

Plant body disc-shaped. Rootlets solitary, devoid of vascular tissue. Reproductive pouches 2, near the base of the frond. Spathe sac-like; inflorescence of 1 pistillate and 2 staminate flowers. Fruit ovoid.

0 Fronds narrowed to a distinct stipe, plainly 3-veined — 1. L. trisulca

0 Fronds ovoid but not narrowed to a stipe, very 4 obscurely 3-veined — 2. L. minor

1. L. trisulca L. Ivy-leaved Duckweed. → Fronds remaining connected and frequently forming dense masses, oblong-elliptical or lanceolate, commonly 6-8 mm. long, narrowed at the base to a distinct stipe, denticulate toward the blunt apex; 3-nerved.

We

Reported from Potlatch Creek by Piper. I have been unable to verify this reference, but St. John (1937) maintains it.

2. L. minor L. Lesser Duckweed. → Fronds oval, or obovate, commonly solitary or in small clusters, 2-3 mm. long, bright green above, often purplish beneath, convex on both surfaces, frequently with a row of papillae along the rather obscure mid-vein.

Occasional in nearly stagnant pools below 3000 feet; the most common species.

10. Clintonia Raf.

Herbs with slender creeping rootstocks and basal leaves. Flowers borne on erect scapes, terminal and solitary in ours. Perianth deciduous, its segments equal, distinct. Stamens 6, inserted at the bases of the segments. Ovary commonly 3-chambered, ovules 2 or more in each chamber; stigma obscurely lobed. Fruit an erect globose berry.

1. C. uniflora (Schult.) Kunth. Queen Cup. Low herbs with leaves 2-3, reclining on the ground or ascending, 15-25 mm. long, 3-5 cm. wide, oblanceolate, acute or obtuse, narrowed at the base, glabrous and dull on the upper surface, the lower long-hirsute; flowers on retrorsely hirsute scapes 10-12 cm. long; perianth segments white, spreading, narrowly elliptical, 22-25 mm. long; stamens about 2/3 the length of the petals, the anthers 4 mm. long, erect, attached in the lower third, the filaments hairy in the lower half; pistil 12-13 mm. long, the style unbranched; berry 10-12 mm. long, commonly a delft blue, frequently variegated or pure white; seeds straw-color, 4 mm. long, curved.

Common in shaded woods from 2500 ~~ft.~~ to 5000 ft. or more; gregarious.

1. Iris (Tourn.) L. Purple Flag.

~~Perennial~~ herbs with ~~creeping, fleshy or sometimes woody, branching rootstocks~~ stems terete. Leaves erect, 2-ranked, flattened and blade-like, chiefly basal. Flowers showy, the perianth segments clawed, united to form a tube at the base, the outer segments broad, reflexed, the inner narrower, erect, both highly colored. Stamens 3, adnate at the base to the outer perianth segments. ~~Ovary 3-chambered~~ style branches petaloid, arching over and partially concealing the stamens, the tip usually forked or 2-lobed. Capsule oblong or oval, 3-6-lobed; seeds vertically compressed in 1 or 2 rows in each cavity.

1. I. missouriensis Nutt. Rootstocks stout, matted, forming tufts and colonies; stems slender 30-50 cm. tall; leaves subequal to or shorter than the stems, 10-12 mm. wide or less, acute; flowers 1-3 on each stem, subtended by two subequal dilated bracts 4-8 cm. long; pedicels 1.5-6 cm. long; outer perianth segments white, strongly veined with purple, often brownish along the median line, rather widely spreading, 5-9 cm. long, 1.5-2.5 cm. broad, the inner segments erect, purple, 4-8 cm. long, 8-12 mm. wide, the style branches somewhat shorter, paler; stamens 2.5 cm. long; capsule oblong, 3-5 cm. long, 10-15 mm. in diameter; seeds 4 mm. in diameter.

Frequent in the grasslands near Moscow and south, extending occasionally as far east as Bovill; white flowered forms sometimes occur.

no H

Worley, ~~St. John 4870~~; Moscow ~~Henderson, Ewing~~; Viola, ~~Ewing~~

2. Sisyrinchium L. Blue-eyed Grass.

Herbs from short, little developed rootstocks, the roots fascicled; stems flattened and often winged along the margin. Leaves linear, grass-like, largely basal. Flowers in an umbel, subtended by two erect, green sheathing bracts, pedicels slender, each subtended by a scarious bract. Perianth segments equal, spreading. Filaments united, the anthers alternate with the slender style branches. Fruit a subglobose capsule. Seeds ovoid.

- Stems with a narrow wing along each margin; perianth 4 segments 10-12 mm. long, bluish purple — 1. S. idahoense
- Stems flattened but not winged; perianth segments 15-20 mm. long, reddish purple, usually much surpassed by the outer bract — 2. S. Douglasii

1. S. idahoense Bickn. Blue-eyed grass. Tufted herbs 20-35 cm. tall; leaves commonly 8-15 cm. long, flattened, in two ranks, the margins scarious near the base; bracts commonly shorter than the umbels, the outermost somewhat longer; flowers 4-5, mature pedicels 2-2.5 cm. long; perianth segments 8-11 mm. long, 3-4.5 mm. wide, dark blue with a yellowish base, oblong, each abruptly acuminate into a short appendage; stamens 5-6 mm. long, filaments united throughout, the anthers bright yellow, divergent at the base; capsule sparingly glandular, 5 mm. in diameter, the valves dehiscing half their length; seeds 1 mm. in diameter. (? S. angustifolium Miller).

Moist open places below 3000 ft.; infrequent; type ~~taken in~~ from Nez Perces Co. by J. H. Sandberg. Lake Pend Oreille, Leiberg; Priest R. Exp. Sta. 2500 ft., Epling 5742; Upper Priest R., 3000 ft., Epling 7471; Weippe, Epling.

2. S. Douglasii Dietr. Purple-eyed grass. Tufted herbs 15-25 cm. tall; leaves commonly 8-15 cm. long, the lowermost scale-like and scarious; bracts commonly longer than the umbels, the outermost frequently twice the length of the inner; flowers 1-3, mature pedicels 2.5-3 cm. long; perianth segments 15-20 mm. long, deep reddish-purple; elliptical, each acuminate into a short appendage; stamens 10 mm. long, united only in the lower third, broader at the base, anthers bright orange, 3.5-4 mm. long, the slender style nearly twice as long; capsule oval, 6-10 mm. long, the valves splitting 2/3 their length; seeds tan color, 2 mm. in diameter, angled, roughened on the back. (S. grandiflorum Dougl., Olsynium Douglasii Bickn.).

Infrequent in moist ground below 3000 feet. Kootenai Co., Leiberg; Moscow, Lundstrom; Hope, Dunkle 339; Post Falls, Christ 954.

Orchidaceae. Orchid Family.

Herbs, sometimes saprophytic and non-green, commonly with rootstocks or fleshy tuberlike roots. Leaves various, commonly somewhat fleshy. Inflorescence mostly spicate or racemose in ours, occasionally solitary. Flowers strongly irregular; perianth segments 6, frequently 5 due to coalescence of parts, commonly differentiated into sepals and petals, all however more or less petaloid. Of the inner series, one, termed the lip, differs from the rest in shape and is sometimes prolonged backwards at the base into a spur; The lip is really the ~~posterior~~ uppermost petal, but by the half twist of the pedicel or ovary it is more commonly directed downward and becomes apparently ~~anterior.~~ the lowermost. At the base of the lip, in the axis of the flower is the column (~~gynandrium~~) composed of a single fertile stamen (in Cypripedium of two stamens and the rudiment of a third), variously coalescent with the style. Anther 2-chambered, each chamber containing one or more masses of pollen (pollinia), or the pollen granular (Cypripedium). Fruit a 1-chambered, 3-valved capsule from an inferior ovary, commonly ribbed, often twisted spirally. Seeds very minute and numerous.

o Plants saprophytic, white, yellowish or purple; leaves
4 scale-like, without chlorophyll
2 Plants pure white; stem from a branching rootstock 1. Eburophyton
2 Plants purple or greenish yellow; stems from coral-like
masses of root 2. Corallorhiza

o Plants not saprophytic, leaves green
1 Leaf solitary, basal; flower solitary 3. Calypso
Leaves 2-many, or if one only, flowers numerous
4 Flowers 1-3 or more, often solitary, showy, the

3 lip a strongly developed sac 1-3 cm. long 4. Cypripedium

4 Flowers several to numerous, usually in a more
or less dense raceme

6 Perianth segments 1.5 cm. long, flowers few,
greenish-purple, nodding 5. Epipactis

Perianth segments less than 1 cm. long; flowers
numerous, greenish or white, ascending

Lip produced below into a curving spur
.5-1.5 cm. long 6. Habenaria

Lip not produced into a spur

10 Leaves 2, opposite, near the middle
of the stem 7. Listera

Leaves 2-5, basal or alternate

Leaves strongly cross-veined,
often veined with white;
inflorescence glandular hairy 8. Goodyera

Leaves parallel-veined, cross
16 veins inconspicuous;
inflorescence glabrous 9. Spiranthes

1. Eburophyton Heller.

~~Waxy~~ white saprophyte, the leaves being reduced to sheathing scales. Inflorescence racemose. Perianth segments nearly equal, spur none, Anther 1. Pollen masses granular.

1. E. Austinae (Gray) Hel. Phantom Orchid. Herb 30-50 cm. tall; leaves 2-3, soon withering; flowers 10-15, bracts 3-10 mm. long, narrowly lanceolate, persistent after anthesis; perianth segments similar, the upper three arching, imbricated, then spreading somewhat, 12-14 mm. long, oblong-oblanceolate, narrowed at the base; lip about 7 mm. long, saccate at the base, brownish at the tip and in the sac, 3-lobed; column subequal to the lip; ovary 8 mm. long, ribbed, the ribs glandular muriculate; capsule not seen. (Cephalanthera Austinae Heller).

In the duff of dry coniferous woods. Rathdrum, Kootenai Co.; ridges above Orogrande Cr., 4000 ft.; Lake Pend Oreille; Moyie R. ~~A monotypic genus of western North America.~~

(Haller) R. Br.

leafless

2. Corallorhiza (~~Chatelain~~ Coral root.

Yellowish or purplish saprophytes or root parasites. Stems unbranched, bearing a few sheathing scales, arising from masses of white intricately branched coral-like roots. Inflorescence a raceme, the flowers nodding in age. Perianth segments subequal except the lowermost, oblong or lanceolate, the lateral sepals united at the base with the foot of the column, in some species forming a more or less evident protuberance or spur at the summit of the ovary, the lowermost petal wider, often toothed below the middle. Anther 1, opening by a lid. Pollen masses 4, waxy. Capsules pendulous.

b Plants yellowish green, 20-30 cm. tall; lower lip white,
4/ sometimes spotted with yellow — 1. C. trifida
(see also C. Mertensiana)

b Plants purplish, sometimes tinged with yellow, rarely
4 < yellowish-brown; lower lip of corolla striped,
blotched or dotted with purple

2 Lower lip blotched, mottled or dotted with purple;
6 < the spur a small protuberance present on the top
of the ovary

4 Stamineal column 4-4.5 mm. tall; lateral lobes of
8 < lower lip 1-1.5 mm. tall; lower lip purple
dotted with distinct dots — 2. C. maculata

4 Stamineal column 5-6 mm. tall, lower lip minutely
8 < mottled with purple, white towards the tip;
lateral lobes wanting or minute — 3. C. Mertensiana

l.c.

2 Lower lip striped with 3 distinct purple stripes;
6 spur wholly wanting — 4. C. striata

1. C. trifida (L.) Chatel. var. virescens (Far.) Ames. → Stems 20-30 cm. tall, yellowish or greenish-yellow, in small clumps, slender; scales commonly 2-4, sheathing about half the stem; bracts 1.5 mm. long or less; ~~flowers~~ yellowish-green, perianth segments 4.5-5 mm. long, 1-nerved; lip oblong, white, shorter than the sepals, with two small teeth below the middle and two ridges on the palate; spur scarcely evident, a small protuberance at the very summit of the ovary; capsule 12 mm. long, elliptical, strongly ribbed, tapering rather abruptly at the base to a short stipe.

Infrequent in

Moist woods, Priest R. Exp. Sta.; Gold Hill; betw. Pend Oreille and Kootenai Rs.; Roman Nose Mt.

2. C. maculata Raf. Stems commonly 30-50 cm. tall, purplish, solitary or gregarious; scales commonly 3, sheathing about half the stem; bracts 1 mm. long or less; perianth segments purple, 8-10 mm. long, the upper five more or less evenly spaced and arching; lip white, dotted with purple, bearing an acute lobe 1-1.5 mm. long on either side below the middle and two ridges in the throat, usually crenulate at the tip; column curved, 4-4.5 mm. tall; spur 1 mm. long; capsules 12-15 mm. long. (C. multiflora Nutt.).

Our most common species in the duff of shaded coniferous woods throughout our range.

3. C. Mertensiana Bong. Stems commonly 30-50 cm. tall, purplish, commonly gregarious; scales commonly 3, sheathing half the stem or less; bracts 2 mm. long; perianth segments commonly reddish purple, 8-10 mm. long, the upper three erect or ascending, closely associated to form a narrow arching hood, widely separated from the two lateral divergent and often recurved segments; lip mostly purple-mottled or blotched or obscurely striped, usually white towards the tip, mostly entire; stamineal column 6 mm. tall, spur 1-2 mm. long; capsules 12-15 mm. long.

In duff of shaded woods; yellowish specimens occur sometimes, the lip being lavender; very rarely clear yellow plants may occur in the same clump as normal ones, the lip being in this case white.

4. C. striata Lindl. Stems 20-50 cm. tall, purplish; scales 2-3, commonly in the lower portion of the stem, bracts lanceolate, 1-3 mm. long; perianth segments dark purple, 7-8 mm. long, oblong, purple-striped along 3 veins, the lip oblong-ovate or obovate, entire, shorter than the sepals, with two short ridges near the base, conspicuously striped with dark purple; spur wholly lacking; capsule elliptical, 12-15 mm. long, narrowed rather abruptly at the base to a narrow stipe.

In duff of shaded woods; infrequent. Kaniksu Forest; Moscow Mt.

3. Calypso Salisb.

Low herb with a single basal leaf arising directly from a small corm with coral-like roots. Stem simple, sheathed by several scale-like leaves. Flowers solitary, terminal, drooping. Sepals and petals equal, distinct, similar, erect or arching over the sac-like tip. Column petal-like, bearing a single anther. Pollen masses 2, waxy. (Cytherea Salisb.).

1. C. bulbosa (L.) Oakes. Calypso. Leaf 2.5-3 cm. long, broadly elliptical or suborbicular, glabrous, the veins prominent beneath; scale leaves membranous, commonly 3; sepals and petals 1.5-2.5 cm. long, narrowly lanceolate, acute, rose-color with three veins; lip 1.5-2 cm. long, bearing 3 ridges at the anterior end which are pilose with stiffish hairs, dilated anteriorly, the saucer-shaped dilation purple-spotted, the sac purple-striped within, prolonged below into two blunt prongs; stamineal column hooded, rose-purple, 10-12 mm. tall; capsules 1 cm. long.

Moist shaded woods, infrequent.

4. Cypripedium L. Lady's Slipper.

Erect leafy herbs with simple stems from coarse fibrous roots or short rootstocks. Leaves several, alternate, broad. Flowers showy, solitary or few. Sepals spreading, narrow, distinct or two united under the lip, which is an inflated sac commonly several centimeters long. Column short, incurved, covered by a fleshy petaloid sterile stamen. Fertile stamens 2, one on each side of the column below the stigma. Stigma terminal, obscurely 3-lobed.

0 Leaves alternate; lip 3 cm. long	1. C. montanum
0 Leaves opposite; lip 12 mm. long	2. C. fasciculatum

1. C. montanum Dougl. Lady's Slipper. Stem 40-60 cm. tall; upper leaves 10-15 cm. long, elliptical, acute, narrowed at the base, sheathing the stem, wholly glandular pubescent, upper leaves diminishing into a foliar bract subtending the solitary flower; sepals 4-6 cm. long, lanceolate, acuminate, brownish-green, the lower united except at the apex; petals similar but narrower; lip ovoid, commonly 3 cm. long or longer, whitish, veined with about 12 purple lines; sterile stamen ovate or obovate, 8-10 mm. long, stigma somewhat shorter; capsule narrowly oblong, 2 cm. long, curving, glandular.

Rare: occurring apparently either in very dry woods or in moist meadows; solitary. Priest R. Exp. Sta., 4000 ft.; Moscow Mt.; Coeur d' Alene; Little Potlatch R.

2. C. fasciculatum Kellogg. Rootstock slender, the old leaf-bases adherent, fibrous; stems erect, 10-12 cm. tall, villous and viscid in the upper part, the lower booted by two or more scarious scales; leaves 2, appearing opposite, 8-10 cm. long, 6-7 cm. broad, oval, glabrous, sessile and clasping; peduncle 4-8 cm. long, villous, the bracts green, lanceolate,

1-3 cm. long; flowers 2-6, the petals and sepals rich purple, lanceolate or ovate-lanceolate, 2 cm. long, acuminate; the lip 12 mm. long, yellow with purple margins; fruit not seen.

Coll. by student of Prof. Bonser, ~~Spokane~~ betw. Wallace and Burke; near trail, summit Fernan Ridge, Coeur d'Alene Mts., Rust 453; rare in our region.

5. Epipactis Sinn.

Leafy perennial herbs from creeping rootstocks. Leaves broad, sheathing at the base. Inflorescence a bracted raceme. Sepals and petals similar, distinct; lip sessile, strongly constricted at the middle, the lower portion concave, saccate, the upper dilated. Spur none. Anther 1, sessile. Capsule elliptical-oblong.

1. E. gigantea Dougl. Stream Orchis. Giant Helleborine. Stems 70-80 cm. tall, or more, simple; leaves 10-15 cm. long, lanceolate, acute, rounded at the base, completely sheathing, glabrous; raceme open, 5-12 flowered, bracts leaflike, 1-8 cm. long; pedicels short, nodding, greenish or veined with purple; sepals 1.5 cm. long, lanceolate, spreading; petals somewhat smaller; lip lanceolate in outline; capsule 3 cm. long, narrowed at the basé to a stipe 3-5 mm. long. (Amesia gigantea Nels. & Macb.; Serapias gigantea A. A. Eaton.).

Moist situations; Kootenai Co., Leiberg.

6. Habenaria Willd. Rein Orchid.

Erect more or less leafy herbs. Stems simple, solitary from one or more fleshy tuber-like roots. Inflorescence a raceme or spike. Lateral sepals spreading, lanceolate; petals more or less connivent with the upper sepal and arched. Lip spreading, deflexed, entire in ours, oblong or lanceolate. Spur commonly about the length of the lip or longer, even or dilated at the base. Anther 1. Pollen masses granular. Capsule oblong, twisted.

~~(Incl. Platanthera, Limnorchis, Piperia) Lysias~~ → Lysiella →

0 Stems leafy throughout, the leaves diminishing above
- 2 Lip lanceolate, dilated at the base, narrowed toward the middle, spur not enlarged at the base, as long as the lip or longer, rarely somewhat shorter; flowers white ~~(or yellowish-green)~~ — 1. H. dilatata

- 2 Lip narrowly oblong, not dilated at the base, spur shorter than the lip, saccate at the base; flowers greenish-white — 2. H. saccata

0 Stems leafy at the base, with a few scales above.
- 2 Leaves orbicular, pressed flat against the ground, 6 glossy — 3. H. orbiculata

- 2 Leaves oblong or lanceolate, soon withering.
  - 4 Spur very slender, more than twice the length 8 of the lip — 4. H. elegans
  - 4 Spur equal to the lip — 5. H. unalascensis

1. H. dilatata (Pursh) Hook. White Bog Orchid. Stems commonly 40-80 cm. tall; leaves sheathing at the base, blades 10-20 cm. long, .5-2 cm. broad, linear, tapering, acute, diminishing upwards; flowers mostly many, rather dense in a raceme or spike, bracts narrowly lanceolate or oblong, erect, subequal to the flowers; perianth commonly white, often but not always delicately fragrant, the segments 4-6 mm. long, the petals half again as broad as the sepals; lip 6 mm. long, lanceolate, dilated at the base and narrower along the middle, spur subequal to the lip or shorter, even, not dilated, curving; capsule 13-14 mm. long, cylindrical, sessile. (Limnorchis dilatata Rydb.).

Bogs, meadows and river bottoms, 2500-6000 ft.

var. leucostachys (Lindl.) Ames. Similar in aspect, the flowers somewhat larger, spur relatively stouter, half again as long as the lip (9-10 mm.). (H. leucostachys Wats.; Limnorchis leucostachys Rydb.).—Similar habitats with us.

2. H. saccata Greene. Green Bog-Orchid. Stems commonly 60-80 mm. tall, leaves sheathing or merely clasping, 5-20 cm. long, 1-3 cm. wide, oblong or oblong-lanceolate, the lowermost obtuse, frequently very blunt, becoming acute above, passing into the slender very acute bracts; racemose, rarely spicate, bracts often longer than the flowers, the lowermost twice their length, spreading; perianth greenish, the segments 3-5 mm. long, the petals twice as broad as the sepals, the rear one broadly ovate, obtuse, truncate at the base, the lip 5 mm. long, narrowly oblong, even throughout or but little broader at the base, thickish, the spur shorter, distinctly dilated and sac-like at the base; capsule 10 mm. long, cylindrical, sessile. (Limnorchis stricta Rydb.).

Bogs, seepage spots and stream banks 2700-5000 ft.; most common species.

3. H. orbiculata (Pursh) Torrey. Large round-leaved Orchis. Stems 50-80 cm. tall; leaves 2, basal, resting on the ground, 15-20 cm. long, nearly as broad, fleshy, bright green and shining; racemose, bracts linear-lanceolate 1-2 cm. long, spreading; perianth segments whitish, 5-7 mm. long, the sepals obliquely lanceolate, the petals ovate, the upper sub-orbicular, truncate at the base; lip linear, 1 cm. long, 3-nerved, incurving, spur 15-18 mm. long, gradually dilated at the tip; capsule cylindrical, 12-14 mm. long, narrowed below to a stipe 5-6 mm. long.

Occasional in rich woods.

4. H. elegans (Lindl.) Bolander. Stems 50-80 cm. tall, slender; leaves commonly two, glossy, basal, soon withering, sheathing stem, the blades 8-12 cm. long, 2-3 cm. wide, oblong or narrowed somewhat below, obtuse, stem leaves but scales 1-2 cm. long; racemes open, bracts 6-8 mm. long, lanceolate, acuminate; perianth segments greenish, lanceolate, the sepals 1-veined; lip lanceolate, 3.5-4 mm. long, thickish, with a ridge down the middle; spur very slender, curving, 10-12 mm. long; capsule elliptical-oblong, 8 mm. long, sessile. (Piperia elegans Rydb.).

Frequent in dry open burns or on dry slopes and ridges, 2500-5500 ft. throughout our range.

5. H. unalascensis (Spreng.) Wats. Stems 30-60 cm. tall, slender; leaves 2-3, basal, soon withering, sheathing; blades 10-20 cm. long, 2-3 cm. wide, oblong or oblanceolate, obtuse, distinctly narrowed at the base, stem leaves of 2-4 scales, 1-2 cm. long; raceme very slender, bracts 3-4 mm. long, ovate, acuminate or obtuse; perianth green, the sepals oblong, thin, 1-veined, 2-2.5 mm. long; petals lanceolate, obtuse, fleshier and greener than the sepals, the lip oblong-lanceolate, dilated at the base, with a single median ridge passing into the funnelform slender spur 3-4 mm. long; column about 1 mm. long; capsule cylindrical, 6 mm. long. (Piperia unalascensis Rydb.).

Frequent on dry slopes and ridges and in dry open burns, 3000-6000 ft., throughout our range. The odor is sweetish but unpleasant.

7. Listera R. Br. Twayblade.

Low simple perennials with short rootstocks and fleshy roots. Leaves two, opposite, subsessile, borne near the middle of the stem. Flowers greenish in a terminal raceme. Perianth segments, except the lip, subequal, slender; lip more or less deflexed and spreading. Spur none. Anther 1, without a lid. Pollen masses 2, powdery. Capsule oval, lightly ribbed.

0 Lip forked, cleft to the middle or beyond; leaves sub-
4 truncate or subcordate at the base. — 1. L. cordata

0 Lip notched, but not deeply; leaves rounded at the base

2 Lip commonly 5-6 mm. long, shallowly notched with a
6 small mucro in the notch, bearing two slender
teeth on either side near the base — 2. L. caurina

2 Lip 7-10 mm. long, notched, but without a mucro in
6 the notch, more or less lobed, or auricled near
the base, but the lobes blunt

4 Lip 7 mm. long, narrowly notched at the apex;
8 expanded into two blunt auricles or lobes
at the base, 1.5 mm. long; ovary and pedicel
glabrous — 3. L. borealis

4 Lip 9-12 mm. long, broadly notched at the apex,
8 with two short blunt teeth near the much
narrowed base; ovary and pedicel glandular — 4. L. convallarioides

1. L. cordata (L.) R. Br. ——→ Stem ~~slender~~ 15-20 cm. tall, sparingly glandular-pubescent or glabrous above the leaves; leaves 1.5-3 cm. long, triangular-ovate, very obtuse, truncate or subcordate ~~at the base~~ and then contracted to a short broad petiole 1-2 mm. long, glossy above; raceme 8-15 flowered, bracts .5-1 mm. long, ovate; pedicels 1-3 mm. long, slender, glabrous; sepals lanceolate; petals oblong, half the length of the lip; lip 4-5 mm. long, narrowly oblong, bearing two slender acute teeth near the base, cleft to beyond the middle, the lobes very slender and acute, often reddish; capsule 4 mm. long, glabrous. ——→ (Ophrys cordata L.).

Shaded mossy woods, 2500-5000 ft.; throughout our range but not common.

2. L. caurina Piper. Stems rather slender, 15-30 cm. tall, glandular pubescent above; leaves 4-7 cm. long, ovate-elliptical, acute or obtuse, rounded at the base; raceme commonly 20-30 flowered, bracts 2-8 mm. long, glandular, lanceolate; pedicels 4-12 mm. long, glandular; perianth segments narrowly lanceolate, acute, 2/3 the length of the lip; lip 5-6 mm. long, wedge-shaped, bearing two slender, darker green, acute teeth near the base, shallowly notched at the apex, bearing a short blunt mucro in the sinus; capsule 6 mm. long, glabrous. (Ophrys caurina Rydb.).

In the duff of shaded coniferous woods 3000-4000 ft,; rather frequent throughout our range.

3. L. borealis Morong. Stems rather stout, 7-15 cm. tall, pubescent above; leaves 1-2.5 cm. long, elliptic-ovate, rounded at the base; raceme 5-8 flowered, bracts 1-2 mm. long, obtuse; pedicels 3-4 cm. long, lanceolate, obtuse, spreading; lip 7-8 mm. long, oblong, narrowly notched at the apex, without a mucro expanded into two blunt auricles 1.5 mm. long at the base, sessile, the margin minutely ciliolate; capsule not seen.

May be expected in the northern part of our region.

glabrous; perianth-segments 5 mm. long,

Torr.

4. L. convallarioides (Sw.) ~~Nutt.~~ Stems slender, 15-20 cm. tall, glandular pubescent above; leaves 3-5 cm. long, broadly oval, very shortly and lightly acuminate at the apex, rounded at the base; raceme 8-15 flowered, bracts 3-5 mm. long, ovate or lanceolate, glandular; pedicels 5-10 mm. long, glandular; perianth segments 4-6 mm. long, narrowly oblong-lanceolate, strongly reflexed; lip 9-12 mm. long, cuneate, bearing two blunt triangular teeth near the strongly narrowed base, broadly notched at the apex, with or without a short mucro in the notch, column projected forward, 3 mm. long; capsule elliptical, 6 mm. long, glandular. (Ophrys convallarioides Wight.).

In moist shaded woods and along narrow streams, 2500-4000 ft.

8. Goodyera R. Br. Rattlesnake Plantain.

Perennial herbs, from creeping rootstocks, with coarse fleshy roots. Leaves basal, rather fleshy, strongly white-veined. Flowers in a terminal one-sided raceme. Perianth segments unequal, the lateral sepals free, the upper united with the petals to form a galea, ovate-lanceolate, concave, the lip dilated at the base.

1. G. repens (L.) R. Br. Leaves dark green, 5-8 cm. long, elliptical-lanceolate, narrowed at the base to a margined petiole 1-2 cm. long, acute; stem 20-25 cm. tall, glandular-pubescent, bearing 2-3 scales; raceme 8-10 cm. long, bracts 1 cm. long, narrowly lanceolate, ascending, subscarious; perianth-segments, sordid white, often greenish, 7-8 mm. long; capsule glandular-hairy, 8-9 mm. long. (Peramium repens Salisb.).

In the duff of dry coniferous woods, 2500-5000 ft.; common throughout our range. Differs from G. decipiens (Hook.) Hubbard (which has not been detected in our area) in its deeply saccate lip and secund raceme (Williams in Am. Mid. Nat. 18: 839).

9. Spiranthes Rich. Ladies Tresses.

Stems from a cluster of 3-4 fleshy, tuberous roots. Leaves chiefly basal, reduced upwards. Flowers in 1-3 ranks in a twisted spike, conspicuously bracteate. Sepals and petals (in ours) erect, more or less joined to form a tube, the lip ascending, reflexed in the upper part, sessile, more or less constricted near the middle, bearing two variously developed protuberances at the very base, these nearly wanting in some specimens. Stigma 2-cleft. Anther 1. Pollen masses 2, powdery. Capsule ovoid.

1. S. Romanzoffiana Cham. & Schl. Roots whitish, 4-6 cm. long, often 1 cm. thick; stems erect, 15-30 cm. tall, leaves ~~but~~ 10-20 cm. long, narrowly oblanceoate to linear, acute or acuminate, attenuate at the base, ~~but~~ sheathing scales above; bracts lanceolate, membranous; perianth whitish or greenish, variable in size, increasing in age, 5-8 mm. long, erect;; lip lanceolate in outline, the basal portion oval or roundish, the tip more or less expanded; capsule oval or obovate, 5-8 mm. long, lightly ribbed, narrowed below to a stipe 2-3 mm. long. (Ibidium Romanzoffianum House).

In very dry soil in burns and on steep slopes or in swampy meadows and sphagnum bogs. In spite of the great differences in the two types of habitat, the plants of both are the same. The ~~vernacular~~ English name may be a later rendering of Pursh's "Ladies Traces".

Juncaceae. Rush Family.

Usually perennial herbs, grasslike, tufted. Inflorescence in terminal clusters, (or seemingly lateral) either open and lax or dense and crowded. Perianth of 6 similar persistent chaffy segments. Stamens 6 (rarely 3). Ovary superior, 1 or 3-~~celled~~chambered; style branches 3. Fruit a loculicidal capsule.

0 4 Leaves stiffish, or wiry, usually columnar but frequently flattened; stems filled with a spongy pith; capsule many seeded; seeds minute. 2. Juncus

0 4 Leaves soft and grass-like, always flattened and thin, frequently with a few soft long hairs especially at the opening of the sheath; stems hollow; capsule 3-seeded, the seeds correspondingly large. 1. Luzula

1. Luzula DC. Wood-Rush.

Perennial herbs with or without rootstocks. Stems hollow, leafy, simple. Leaves grass-like, soft and thin, often sparsely decorated with slender hairs. Flowers in open panicles or congested into short spikes, these solitary or umbellate. Perianth segments chaffy or scarious, subequal. Stamens 6; ovary 1-~~celled~~chambered with usually 3 ovules. Seeds much larger than in Juncus but resembling them. (Juncoides Adans.).

0 4 Flowers solitary (less often 2 or 3) at the ends of branchlets, arranged in loose panicles

2 Perianth 2.5-3.5 mm. long; capsule acutish — 1. L. glabrata

2 Perianth 1.5-2.5 mm. long; capsule obtuse

4 Flowers dark brown — 2. L. Piperi

4 Flowers straw-colored or greenish

6 10 Branchlets of the inflorescence widely spreading nearly at right angles — 3. L. divaricata

6 10 Branchlets of the inflorescence not widely spreading nearly at right angles; the panicle drooping as a whole — 4. L. parviflora

0 4 Flowers congested into spikes, these solitary or umbellate

2 Spikes solitary, nodding — 5. L. spicata

2 Spikes 2-4 or more in an unequal umbel — 6. L. campestris

1. L. glabrata (Hoppe) Desv. Rootstocks ~~2-2.5 mm. in diameter~~ creeping, scaly; stems tufted, 20-30 cm. tall; leaves 2/3 the length of the stem, 5-10 mm. wide, entirely glabrous, somewhat shining, attenuate at the apex, stem leaves commonly three; inflorescence an open subumbellate panicle, the branches of which are abruptly divaricate, 3-8 cm. long, subtended by a subscarious bract 8-15 mm. long; the slender branchlets subtended by light brown scarious bractlets, lacerate toward the apex, 2-5 mm. long; flowers solitary at the ends of the branchlets, ~~each subtended by two ovate scarious bractlets half the length of the perianth~~ bracteate; perianth segments deep purplish brown, 2.5-3.5 mm. long, subequal, lanceolate, acuminate, lacerate toward the apex; anthers twice the length of the filaments; capsule ovoid, 3-3.5 mm. long, polished, the valves shortly acuminate, the style approximately equal to the capsule; seeds elliptical, brown, 1.5-1.8 mm. long.

~~Ranges~~ from 2500 feet to 7000 feet or more but is most commonly alpine where it frequently takes possession of open gentle slopes or saddles, ~~furnishing~~ excellent forage. In late summer the foliage turns reddish or brown, giving a characteristic aspect to the stand. Snowy Top Mt. 6500 ft.; Divide betw. St. Joe and Clearwater Rs.; St. Joe R., 2500 ft.; S. Baldy Mt., 5000 ft.; 6000 ft.; Twin Peaks, 4000 ft.

2. L. Piperi (Cov.) M.E. Jones. Rootstocks ~~2-2.5 mm. in diameter~~ creeping, scaly; stems loosely tufted, 20-30 cm. tall; leaves 1/2 the length of the stem or less, numerous, largely basal, 3-6 mm. wide, glabrous but with a few slender hairs near the opening of the sheath, rather glaucous, ~~cauline leaves 2 or 3~~; inflorescence an open more or less drooping panicle 5-10 cm. long, subtended by a submembranous bract 1-3 cm. long; the slender branchlets subtended by light brown scarious bractlets, lacerate toward the apex, 2-5 mm. long; flowers solitary at the ends of the branchlets ~~each subtended by two ovate scarious bractlets half the length of the perianth~~ bracteate; perianth segments deep purplish brown, 2 mm. long, subequal, lanceolate, acuminate, lacerate towards the apex; anthers twice the length of the filaments; capsule subglobose, 2-2.5 mm. long, subequal to the perianth, the valves obtuse after dehiscence, the style shorter than the capsule; seeds elliptical, light brown, 1.2 mm. long.

Ridges south from Weissners Peak, 5800 ft.; Weissners Peak; Snowy Top Mt., 7000 ft.; Roman Nose, 6000 ft.

3. L. divaricata Wats. ——→ Rootstocks ~~2-2.5 mm. in diameter~~ creeping, scaly; stems tufted, 30-50 cm. tall; leaves 1/2 the length of the stem or less, numerous, largely basal, 5-8 mm. wide, glabrous and rather shining but with a tuft of loose hairs near the opening of the sheath, cauline leaves 2-3; inflorescence an open panicle 5-15 cm. long, ~~subtended by a foliar or membranous bract 1-3 cm. long~~ the slender branchlets widely divaricate, ~~subtended by bright brown scarious bractlets 0.5 mm. long~~ long-villous on the margins; flowers 1-3 at the ends of the branchlets, each subtended by two ovate scarious bractlets half the length of the perianth, more or less fimbriate; perianth segments green becoming straw-colored, 2 mm. long, subequal, lanceolate, acuminate, not lacerate; anthers half the length of the filaments; capsule ovate, slightly longer than the perianth, the valves obtuse, straw-colored; seeds elliptical, dark brown, especially toward the apex, 1.2 mm. long.

Wooded slopes above Snowgrande Cr., 4000 ft.; Thatuna Hills; Priest R. Exp. Sta.; Gold Creek; Headquarters.

the subtending bractlets

(Ehrh.) (or To)

4. L. parviflora Desv. ——→ Rootstocks ~~2-2.5 mm. in diameter~~ creeping, scaly; stems tufted, 30-40 cm. tall; leaves 1/3-2/3 the length of the stem, 6-12 mm. broad, glabrous and green or with a few slender hairs, particularly at the opening of the sheath; cauline leaves 3-5, drooping, the uppermost sometimes overtopping the inflorescence; inflorescence 6-12 cm. long, paniculate, very open when mature, drooping as a whole, the lower branches occasionally reflexed, lowermost bract scarious, 1-1.5 cm. long, bractlets scarious, oblong, acuminate or somewhat lacerate; flowers solitary at the ends of the branchlets, ~~each subtended by two ovate scarious bractlets~~ ~~equal the length of the perianth~~; perianth segments green becoming straw-colored (rarely light brown with us) very thin and scarious, 1.5-2 mm. long, lanceolate, acuminate, infrequently lacerate at the tip; anthers subequal to the filaments; capsule ovoid, more or less narrowed at the tip, subequal with the segments, straw-colored, obtuse; seeds brown, elliptical, plump, 1-1.2 mm. long.

stoate

age

Frequent in burns, persisting to the middle of the forest, infrequent in mature forest; ranges from 2500 feet to 5000 feet. Upper Priest R., 3000 ft.; 4000 ft.; Fish Lake Cr., 5000 ft.; near Pritchard, 4000 ft.; Moscow; Headquarters.

5. L. spicata (L.) DC. ——→ Rootstocks wanting, the stems tufted, 15-30 cm. tall, very slender toward the summit; leaves 1/3-1/2 the length of the stem, 1-3 mm. broad, tapering to a slender apex, erect, stiffish, cauline leaves 3-4, all pilose along the margin of the sheath; inflorescence a nodding spike 1-2 cm. long, 5-6 mm. broad, ~~subtended by a narrowly lanceolate, acuminate, scarious bract .5-1 cm. long,~~ ——→ this and the branchlets subtended by similar ~~smaller~~ bracts, the margins of which are often fimbriate; each flower subtended by two lanceolate-ovate fimbriate bracts half the length of the perianth segments; segments 2 mm. long, light brown, thin, scarious, lanceolate, aristulate, subequal; capsule ovoid-globose, acutish; seeds narrowly ovoid.

Dry burn above river, Bungalow R. S., 3000 ft., Epling and Houck 9256.

var. somosa (E. Mey.) Fern. & Wieg.

6. L. sylvestris x (L.) DC. ——→ Rootstocks wanting or short and stout; stems tufted, 30-40 cm. tall, pliant; leaves 1/2-2/3 the length of the stem, 3-6 mm. wide, noticeably pilose, especially at the opening of the leaf sheaths, cauline leaves 2-3; inflorescence an irregular umbel of 2-4 rather loose spikes, often exceeded by the two subtending foliar bracts, peduncles .5-3 cm. long; ~~bractlets ovate, scarious, lanceolate, lacerate, aristulate~~ ——→ perianth segments 2-3 mm. long, chaffy green becoming light brown, lanceolate, acuminate; anthers twice the length of the filaments; capsule oval-oblong or subglobose, somewhat shorter than the perianth, the valves obtuse; seeds 1.2 mm. long, ovoid, plump, with a conspicuous hyaline caruncle at the base.

(L. ~~sylvestris~~ Meyer)

Occasional or frequent on open slopes or in meadows below 3000 feet.

Meadow, Priest R. Exp. Sta.; Thatuna Hills; Santa; Headquarters.

2. Juncus L. Rushes.

Perennial herbs (rarely annual), ~~commonly growing in marshy ground~~, the stems simple, columnar or flattened, commonly with a pithy interior, not hollow. Leaves mostly basal and grass-like, linear, columnar or flattened, either transversely (i.e. the flat surface to the stem), or laterally, appearing as though jointed in some species due to variously developed transverse walls, sheathing at the base, with scarious margins along the free portion which may or may not terminate in short erect auricles at the point of departure of the blade from the stem. Inflorescence appearing either lateral on the stem, the stem being apparently prolonged beyond, or terminal, subtended by a more or less leaflike bract ~~which may or may not exceed the inflorescence~~; flowers borne singly in panicles or congested into glomerules; ~~when borne singly each flower is commonly subtended by two bractlets, when congested, commonly only one~~; perianth segments subequal, similar, chaffy or scarious, erect; stamens 6 (rarely 3), included; ovary 1 or 3-chambered; style branches 3, usually red; capsule commonly oval, subequal with the perianth, often 3-angled; seeds numerous, small, elliptical, commonly with a short apiculus at one or both ends, these occasionally developed into a short appendage.

0 Low annuals with numerous flowers borne singly along the
4 stems, each subtended by two scarious white bractlets 1. J. bufonius

0 Perennials with well developed rootstocks or tufted;
4 flowers in groups of three or more, subtended by a common bract

2 Inflorescence appearing as though borne laterally
6 near the middle of the stem; flowers loosely bunched

4 Stamens 3, opposite the outer perianth segments;
8 flowers 100 or more (often) 2. J. effusus

4 Stamens 6, flowers infrequently more than 25.

6 Anthers shorter than (or equal to) the filaments,
10 flowers green 3. J. filiformis

6 Anthers twice the length of the filaments;
10 flowers brown 4. J. balticus

2 Inflorescence more or less terminal, however, often subtended by a leaf-like bract which
6 may exceed it

4 Flowers commonly 2 or 3 (rarely 1) in a single
8 lax cluster on each stem (See also J. tenuis)

6 Leaf-blades terete, 2-5 cm. long or more;
10 capsule very acute at the apex 5. J. Parryi

6 Leaf-blades reduced to a bristle 1-3 mm.
10 long; capsule truncate at the apex 6. J. Drummondii

4 Flowers more numerous in each inflorescence;
8 inflorescence commonly a cluster of several glomerules; in two species a single dense glomerule, in three species a contracted or open panicle.

6 Inflorescence an open or contracted panicle,
10 never dense, the branches composing it always apparent, .5-2 cm. long or more; each flower subtended by a pair of closely appressed bractlets.

8 Ovary wholly 3-chambered, the cross walls
12 sometimes separating at maturity; panicle contracted, usually less than 2 cm. long.

10 Capsule longer than the perianth,
14 the valves remaining joined at the very apex; seeds with appendages — 7. J. Vaseyi

10 Capsule shorter than the perianth, the
14 valves spreading somewhat; seeds merely apiculate — 8. J. confusus

8 Ovary incompletely 3-chambered, the cross walls about
12 1/2 the width of the locule; panicle usually lax, 2-5 cm. long — 9. J. tenuis

6 Inflorescence a cluster of dense, more or less
10 globose glomerules, or in some a single glomerule, the branches of the glomerules not apparent; each flower subtended by a single bractlet.

8 Glomerules solitary and terminal, rarely
12 two (J. Regelii sometimes has a solitary glomerule) — 10. J. Mertensianus

8 Glomerules 2-many

10 Leaf-blades columnar, soft and pithy,
14 appearing jointed when held to the light, due to internal cross walls

12 Heads globose, 2-7, the flowers
16 extending in all directions

14 Capsules blunt, shorter than the
18 perianth — 11. J. columbianus

14 Capsules narrowed above the middle,
18 acute, a third longer than the perianth — 12. J. nodosus

12 Heads hemispherical, more numerous, the
16 < lowermost flowers horizontal or
ascending, not reflexed

14 Opened anthers clearly shorter than
18 < the filaments; mature capsules
longer than the perianth

16 Capsules straw-colored; stems
20 mostly 10-40 cm. tall — 13. J. Richardsonianus R.

16 Capsules brown; stems 40-60 cm.
20 tall — 14. J. articulatus

14 Opened anthers subequal to the
18 < filaments; mature capsules
shorter than the perianth

16 Perianth segments 3-3.5 mm. long,
20 < thin and scarious, the midvein
usually greenish — 15. J. badius

16 Perianth segments 4-4.5 mm. long,
20 firm, dark brown throughout — 16. J. nevadensis

10 Leaf-blades flattened

12 Leaf blades without internal cross-walls,
16 < not appearing jointed when held to the
light

14 Perianth segments 5-6 mm. long; bractlets
18 straw-colored, thin and scarious — 17. J. Regelii

14 Perianth segments 4 mm. long, bractlets
18 brown, opaque — 18. J. falcatus

12 Leaf-blades appearing jointed when held to
16 < the light, the cross walls not, however,
complete

14 Capsule longer than perianth; seeds
18 < amber-colored, apiculate and acute
at both ends; stamens usually 3 (4-6) — 19. J. ensifolius

14 Capsule subequal to the perianth; seeds
18 < brown, very minutely apiculate but
obtuse at both ends; stamens 6 — 20. J. brunnescens

1. J. bufonius L. Toad Rush. ~~——→~~ Annual, rootstocks wanting, ~~of variable habit~~ 5-20 cm. tall, ~~branching from the base~~ stems numerous, often tufted or forming mats, ~~commonly ascending~~; leaves few, 1-3 cm. long, expanded and sheathing at the base, the blade filiform, or scale-like; inflorescence many-flowered, branching, loose and open, as long as the stem proper; outer bract leaf-like, commonly curving, 1-8 cm. long, expanded at the base ~~with a scarious margin~~ ~~inner bract similar but shorter~~, each branch subtended by two short scarious bracts, pedicels variable, 1-10 mm. long or more; flower subtended by two ovate or lanceolate ~~scarious~~ bractlets 1/3-1/2 the length of the perianth; segments 3-6 mm. long, narrowly lanceolate, acuminate, the scarious margin equal to the green part, veins obscure, the inner segments shorter and more scarious; stamens half the length of the segments, anthers shorter than the filaments; capsule 3-5 mm. long, ovoid to oblong on the same plant; seeds .5 mm. long, variable, lightly curved, plump, apiculate at one or both ends, longitudinally striate.

Sandy or muddy stream bottoms, roadsides or meadows below 3000 feet, often gregarious.

2. J. effusus L. Bog Rush. Rootstocks stout, matted, the stems densely tufted, soft and pliant, stout, 60-120 cm. tall or more; leaves all basal, scale-like and sheathing, 5-10 mm. long; ~~the blades short, acicular appendages or wanting;~~ inflorescence a dense cluster appearing as lateral to the stem; flowers numerous, 100-150 or more, the branches 1-3 cm. long, slender, the bracts scarious, each flower bracteate; pedicels 1-3 mm. long; perianth segments subequal, 3-3.5 mm. long, lanceolate, acute, green, drying straw color with two brown lines, the inner 3-veined; stamens about half the length of the perianth segments, 3, opposite the outer segments, the anthers shorter than the filaments; capsule about 3 mm. long, obovate, retuse, 3-chambered, polished; seeds scarcely .5 mm. long, apiculate at both ends, curved.

Boggy open stream bottom near Kellogg, Epling and Houck 10098.

3. J. filiformis L. Rootstocks creeping, 3 mm. in diameter, clothed with lanceolate scales 4.5 mm. long; apparent stems erect, pliant, 20-30 cm. tall; leaves all scale-like and sheathing, 2-5 cm. long; ~~the blades short acicular appendages~~ 1-2 mm. long or ~~wanting~~; inflorescence 8-9 flowered, appearing as a cluster shortly below the middle of the apparent stem, the outer bract much elongated, being the apparent continuation of the stem, 10-15 cm. long, terete, sheathing only at the

base, the margins scarious there, the inner bract 3 mm. long, scarious; flowers on pedicels 1-2 mm. long, each closely bracteate; outer perianth segments 3 mm. long, linear-lanceolate, acute, 3-veined, the inner 2-2.5 mm. long, 1-veined, all green and scarious; stamens half the length of the segments, the anthers somewhat shorter than the filaments; capsule oval to subglobose, 25 mm. long, polished; seeds .5 mm. long, curving slightly and apiculate at one or both ends, but not appendaged.

Usually along sandy stream bottoms below 3000 ft.; gregarious. Mullan Peak, 3000 ft.; bank of Upper St. Maries R., 3000 ft.; Orogrande Cr.; Bonners Ferry; Sandpoint; Priest R. Exp. Sta. 2500 ft.; Priest Lake; Mooyie R.

4. J. balticus Willd. var. montanus Engelm. Rootstocks creeping, the scales ovate-lanceolate, 4-5 mm. long; apparent stems erect, soft and pliant, 20-50 cm. tall, leaves all sheathing and scale-like, brown and glossy, 1-10 cm. long, the blades 1 mm. long, or wanting; inflorescence 5-20 flowered, appearing as a cluster somewhat above the middle of the apparent stem, the outer bract much elongated, 5-8 cm. long, terete, very acute, sheathing only at the base, the inner bract 3 mm. long; each branch of the inflorescence bracteate; flowers on pedicels 1-3 mm. long, each subtended by several scarious bracts; outer perianth segments 3-4 mm. long, lanceolate, acute, obscurely veined, the middle portion green, becoming straw-colored, the margins brown, scarious, inner segments similar, somewhat shorter and narrower, 1-veined; stamens about 2/3 the length of the segments, the anthers twice the length of the filament; capsule oval or oblong, 3 mm. long, polished, brown; seeds .5 mm. long, curving slightly and usually apiculate at one or both ends. (J. ater Rydb.).

In boggy ground and ditches along roadways. Near Kellogg; Moscow; Partridge Cr.

5. J. Parryi Engelm. Southern Tundra Rush. Rootstocks matted, stems tufted, 15-40 cm. tall, stiffish; innermost leaves 1/3 to 1/2 as long as the stems, abruptly expanded 1-2.5 cm. from the base, sheathing below, channeled above, the outermost scale-like and chaffy, the lowermost lanceolate, 3-5 mm. broad, shining; inflorescence commonly 2-3 flowered, the outer bract 2-4 cm. long, erect, twice the length of the flower cluster or more, the inner bract commonly 1 cm. long, both brown-scarious and sheathing at the base; flowers on pedicels 1-20 mm. long, each bracteate; outer perianth-segments 5-7 mm. long, narrowly lanceolate, green, the sides brown, the margins scarious, veins 5 but obscure, the inner 5 mm. long, 3-veined; stamens 1/3 to 1/2 the length of the perianth; seeds elliptical, less than 1 mm. long, with two tail-like appendages each as long as the seed itself.

Grassy slopes and ridges usually above 5000 ft., but as low as 3500 ft.; sometimes forms considerable areas with Hieracium albertinum and Antennaria. ~~This rush reaches its northern limits just to the north of our area. Also known from just over state line on summit of Mt. Spokane, 5806 ft.~~ Near Stevens Peak, 6400 ft.; Snowy Top Mt., 5000 ft.; Upper Priest R., 3500 ft.; Revett Lake, 7000 ft.; Snow Peak, 6000 ft.

6. J. Drummondii E. Meyer. Northern Tundra Rush. Rootstocks matted, stems tufted, 20-30 cm. tall, rather pliant; leaves all scale-like, 2-5 cm. long, sheathing, all blades reduced to short acicular appendages 2-3 mm. long or wanting; inflorescence commonly 2-3 flowered, the outer bract 1-2 cm. long, channeled, expanded and sheathing at the base, the inner scarious, 3 mm. long; flowers on pedicels 2-20 mm. long, each closely subtended by two bracts; outer perianth-segments 6-7 mm. long, narrowly lanceolate, very acute or acuminate, 4-5 veined, marked by two brown lines, the margins scarious, inner 4-5 mm. long, similar but narrower, 3-veined; stamens less than half the length of the perianth, the anthers and filaments subequal; capsule oblong,

subequal to the perianth, narrowed somewhat above, but truncate, the valves spreading in fruit; seeds elliptical, less than 1 mm. long, with two tail-like appendages each as long as the seed itself.

Alpine ridges usually above 5000 ft., in much the same habitats as J. Parryi, ~~its distribution, however, is more northern, ranging north to Alaska.~~ Ridges south of Wiessners Peak, 6500 ft.; Fish Lake, 6500 ft.; Shedroof Mt., 5000 ft.; Pritchard, 5000 ft.; Lion Cr., 5000 ft.; Snow Peak, 7000 ft.

7. J. Vaseyi Engelm. Rootstocks matted, the stems tufted, erect, 50-60 cm. tall; leaves about 2/3 the length of the stems or less, filiform, channelled, sheathing for 2-4 cm. at the base, all basal; inflorescence 10-20 flowered, 1-2 cm. long, rather crowded; outer bract 3-5 cm. long, slender, channelled, the inner about 1 cm. long; pedicels 1-2 mm. long; flower subtended by 2 ovate scarious bracts; segments 3.5 mm. long, green, drying straw-color, narrowly lanceolate, very acute, subequal, erect and rather rigid, the margins scarious but narrow, the veins obscure; stamens about half the length of the segments; capsule oblong-oval, nearly 4 mm. long, retuse at the apex, exceeding the perianth slightly, polished, 3-chambered, the septa separating at maturity, the valves often joined at the style after dehiscence, the capsule thus appearing poricidal; seeds oblong, .5 mm. long, mostly straight, tailed at each end, the appendages nearly as long as the seed.

Near Kellogg, stream bottom, 2500 ft., Epling and Houck 10299.

8. J. confusus Coville. ——→ Rootstocks slender and matted, stems tufted, erect, stiffish, 30-50 cm. tall, 1 mm. or less in diameter; leaves half the length of the stem or less, filiform, abruptly expanded below and sheathing; inflorescence densely 10-20 flowered, outer bract 1-12 cm. long, very slender, flat, ~~inner shorter but similar, each branch subtended by two short scarious bracts~~; pedicels 1-3 mm. long; bractlets 1/3-1/2 the length of the perianth; perianth segments 3.5-4 mm. long, lanceolate, green in the middle, with 2 brown lines and broad scarious margins, very acute, subequal, rigid at maturity, drying light straw color, veins obscure; stamens 2/3 the length of the segments, the anthers shorter than the filaments; capsule oblong, angled, 3 mm. long, exceeded by the perianth, apex retuse, completely 3-~~celled~~; the septa breaking apart in the upper half at maturity; chambered seeds narrowly elliptical, .5 mm. long, each with a small apiculus at each end.

River bottoms and meadows at about 2000 ft. elevation.

9. J. tenuis Willd. ——→ Rootstocks slender and matted, often wanting, stems tufted, erect, 20-50 cm. tall, ~~.5-1.5 mm. in diameter~~; leaves half the length of the stem or less, filiform, often very slender, abruptly expanded below and sheathing; cauline leaves none; inflorescence 5-20 flowered, diffuse; outer bract 2-8 cm. long, very slender, flat, channeled, inner shorter but similar, each branch subtended by two short scarious bracts, or the outer leaflike but reduced, pedicels 1-3 mm. long; bractlets 1/3-1/2 the length of the perianth; perianth segments 3.5-4 mm. long, green, frequently reddish toward the tip, drying light straw color, narrowly lanceolate, with broad scarious margins, very acute, subequal, veins obscure; stamens about half the length of the segments, the anthers shorter than the filaments; capsule oblong, angled, 3 mm. long, exceeded by the perianth, apex truncate, chambered incompletely 3-~~celled~~; seeds narrowly elliptical, each with a small apiculus at each end.

Variable in the number of flowers and density of the inflorescence; low ground and stream bottoms below 3000 ft.

l.c. (10.) J. Mertensianus Bong. Stems loosely tufted, 15-30 cm. tall, pliant, from slender rootstocks; leaves soft, columnar, often subequal to the stems, 1-2 mm. in diameter, the cauline 2-3, with auricles .5-1 mm. long, blunt, decurrent in a scarious margin; inforescence a single dense globose terminal glomerule, rarely two, subtended by a membranous bract 1-4 cm. long, bractlets single, scarious, lanceolate, acute or acuminate, subequal to the perianth; perianth segments green with brown margins, soon deep chestnut brown, shining and rather coppery, 4 mm. long, subequal, lanceolate, acute or acuminate; stamens somewhat shorter than the segments, the filaments twice the length of the anthers; capsule oval-oblong, angled, flattened at the apex, subequal to the perianth; style lavender, the branches 2 mm. long; seeds ovate-lanceolate, .6 mm. long, frequently with short appendages.

On mossy rocks along alpine streams or in alpine seepage places, usually above 4000 ft. Divide betw. St. Joe and Clearwater R!s., 5000 ft.; Lion Creek, 4000 ft.,.5000 ft.; Fish Lake, 6500 ft.; Upper Priest R., 3000 ft.

11. J. columbianus Cov. Stems gregarious rather than tufted, 20-40 cm. tall, 1-1.5 cm. in diameter from slender rootstocks; the leaves 1/2 - 2/3 the length of the stems, the basal expanded and sheathing, 3-6 mm. wide, the stem leaves with auricles decurrent for 1-3 cm., all distinctly but not sharply septate; the 5-10 glomerules tending to globose, 7-9 mm. in diameter, light brown; bractlets broadly ovate, shortly aristate, 3-4 mm. long, scarious; perianth segments 3-4 mm. long, oblong-lanceolate, acuminate, subaristate, the midrib green, becoming coppery and scarious; stamens about 1/2 the length of the segments, the anthers subequal to the filaments; capsules oblong, somewhat shorter than the perianth-segments, obtuse, tipped by a short beak, coppery; seeds apiculate at each end, ovate-elliptical, .5 mm. long or less, areolate, the areole microscopically lineolate. (J. nevadensis Wats. var. columbianus (Cov.) St. John).

Broad stream bottoms and lake shores below 3000 ft. Priest Lake; Potlatch; Lake Pend Oreille; Lake Tessemini.

12. J. nodosus L. Stems pliant, 20-50 cm. tall, each arising from a tuber-like thickening in the scaleless rootstocks; leaves subequal to or longer than the stems, 1-2 mm. in diameter, appearing jointed, cauline leaves with acute auricles, decurrent for sometimes 3-4 cm.; glomerules terminal, commonly 4-6, less than 1 cm. in diameter, globose, subtended by a leaf-like bract which is often twice as long or longer; bractlets lanceolate, acuminate, scarious, single; flowers 10-15; perianth-segments green in the middle, with a tinge of red, lanceolate-subulate, becoming chaffy or subscarious, the outer somewhat shorter; stamens half the length of the perianth, anthers and filaments subequal; capsule lanceolate, very acute, 3-angled, 1-chambered, 1/3 longer than the perianth, the valves remaining joined at the apex, revolute, brown; seeds oblong-lanceolate or oval, apiculate, .5 mm. long.

Lake shores and broad streams bottoms below 3000 ft. Lake Pend Oreille; Bonners Ferry; Kellogg.

13. J. Richardsonianus Schult. Stems 10-40 cm. tall, columnar, loosely tufted from rootstocks; leaves 2/3 the length of the stem or subequal to it, columnar, appearing jointed, acute, obtusely auricled, at least above, the scarious margin strongly decurrent; inflorescence terminal, very open, branching, the peduncles slender, 1-4 cm. long, the glomerules 3-6, 5-6 mm. in diameter, 5-9 flowered, the flowers erect, the subtending bracts various, 3-5 cm. long and leaf-like, or 1 cm. long or less, and chaffy, bractlets single, lanceolate, scarious, straw-colored, subequal to the perianth; perianth-segments, at first green, then straw-colored, lanceolate, acute, subequal, 3-4 mm. long, the outer 1-veined, the inner 3-veined; stamens 1/2-2/3 the length of the perianth, the anthers shorter than the filaments; capsule oval, straw-colored, somewhat longer than the perianth-segments, subacute; seeds elliptical, lanceolate, .5 mm. long, shortly apiculate, amber colored.

Sandy lake shores below 3000 ft.# Priest Lake; Kootenai County; Lake Pend Oreille; Potlatch.

14. J. articulatus L. var. obtusatus Engelm. Rootstocks branching, matted, the stems tufted, 40-60 cm. tall; basal leaves 5-8 cm. long; stem leaves 1-3, larger, sheathing at the base for 2-3 cm., the blades terete, the septa distinct; inflorescence of 5-11 glomerules, the peduncles slender, divaricate, 1-3 cm. long, the subtending bract subfoliar or scarious, each branchlet subtended by a scarious bract 5-8 mm. long; glomerules hemispherical; 9-15 flowered, the bractlets single, scarious, shorter than the flowers; outer perianth-segments 2.2-2.5 mm. long, lanceolate, acute, green, 1-veined, inner somewhat shorter, 3-veined, the tips brownish, rather blunt; stamens half the length of the segments, the anthers shorter than the filaments; capsule dark chestnut brown, glossy, subacute, 3 mm. long; seeds ovate-lanccolate, apiculate, dark brown, 5 mm. long.

Sandy river bottom, Bonners Ferry, Epling 10468.

15. J. badius Suksd. Stems gregarious rather than tufted, 40-60 cm. tall, 1-2 mm. in diameter, lightly compressed, soft and pliant, from slender root-stocks; leaves mostly shorter than the stems, the basal ones 3-6 mm. broad with blunt auricles 1-2 mm. long, the scarious margins decurrent for 4-6 cm., all septate; flower clusters hemispherical, mostly 3-8 on slender peduncles usually not over 1 cm. long, subtended by brown scarious bracts 3-6 mm. long, abruptly acuminate; outer perianth segments 3-3.5 mm. long, dark brown with midribs usually greenish toward the base, acuminate, the inner brown throughout, somewhat shorter and more obtuse; stamens about 2/3 as long as the perianth, their anthers subequal to the filaments; capsules scarcely 3 mm. long, obtuse, shortly beaked at the apex, the styles rather tardily deciduous; seeds .5 mm. long.

Frequent in marshy ground in boggy meadows at low elevations; a species which resembles J. nevadensis but is smaller and more graceful throughout. Partridge Cr., Epling; Emerald Cr., Epling and Offord.

16. J. nevadensis S. Wats. Stems gregarious rather than tufted, 40-60 cm. tall, 2-4 mm. in diameter, lightly compressed, from slender root-stocks; leaves mostly shorter than the stems, the cauline with blunt auricles, the narrow margin decurrent sometimes 8-12 cm., the basal leaves expanded, sheathing, 6-10 mm. across at the base, all distinctly and sharply septate; inflorescence terminal, 2-3 times branched, the glomerules hemispherical, 15-30 on each stem, 7-9 mm. in diameter, brown, borne on slender peduncles mostly 1-3 cm. long, the bractlets scarious, brown, broadly ovate, abruptly aristate, 4-6 mm. long; flowers narrowed at the base to a short stipe about 1 mm. long, their segments 4.5 mm. long, subequal, firm, deep brown, abruptly acuminate at the apex to a sharp mucro; stamens 2/3 as long as the perianth, the anthers 4 times as long as the filaments; capsules not seen. (J. Suksdorfii Rydb.)

Frequent in boggy ground of meadows or along roadways. Valley of Little Potlatch R.; head of Little Potlatch R.; Forks of St. Maries R., 3200 ft.; Harvard.

17. J. Regelii Buch. Stems loosely tufted, erect, 30-60 cm. tall, columnar or somewhat compressed from rootstocks; leaves half the length of the stems or less, flattened, 2-3 mm. broad, striate, glaucous and minutely roughened, cauline leaves commonly 1, auricled, the auricles obtuse, .5-1 mm. long, decurrent in a white-scarious margin; inflorescence terminal, subtended by a membranous attenuate bract 2-4 cm. long, the acumination frequently foliar; glomerules 2-4 on unequal peduncles .5-3 cm. in length, bractlets single, lanceolate, scarious, aristulate, subequal to the perianth segments; flowers 6-20; perianth-segments green with lateral brown stripes, 6-6.5 mm. long, the outer lanceolate with narrow scarious margins, the inner ovate with broad scarious margins, all scabrous on the back; stamens 1/2-2/3 the length of the segments, anthers and filaments subequal; style branches 4 mm. long at maturity; capsule oblong, somewhat shorter than the segments, angled; seeds elliptical with short appendages.

Bank of upper St. Maries R., 3000 ft.; West Kootenai; upper Priest R.; Kelly Cr., 3000 ft.; Santa.

18. J. falcatus E. Meyer. → Rootstocks slender, ~~1.5-2 mm. in diameter~~ → stems loosely tufted, 10-20 cm. tall, terete, ~~1-1.5 m. in diameter~~ → subglaucous and minutely roughened; cauline leaves 1 or wanting, shortly auricled, ~~the auricles obtuse, decurrent in a rather broad margin~~, the basal leaves ~~similar~~ → 1/2-2/3 the length of the stem or longer, flat, minutely roughened, sickle-shaped; inflorescence terminal, subtended by a submembranous, acuminate bract 2-2.5 cm. long, subequal to the inflorescence; glomerules 2-4 on peduncles 1-2 cm. long; bractlets lanceolate, brown and chaffy rather than scarious, minutely roughened, subequal to the perianth segments; flowers 3-8, perianth segments green in the middle, chestnut-brown and subscarious on the margins, 4-5 mm. long, oblong-lanceolate, acute, minutely roughened on the back; stamens half the length of the segments, the anthers longer than the filaments; capsule oblong, subequal to the perianth segments, angled; seeds oblong-elliptical, obtuse or shortly apiculate.

Wet places, Kootenai Co., Sandberg.

19. J. ensifolius Wikstr. Stems from rootstocks, loosely tufted, more or less flattened, 40-50 cm. tall, 1-1.5 mm. in diameter; leaves flattened laterally, 3-6 mm. broad, apparently jointed, but the septa sometimes very obscure, half the length of the stem, auricles none, the blade sheathing, scarious; inflorescence terminal, open, the peduncles 1-4 cm. long, subtended by a leaf-like bract 2-10 cm. long; glomerules commonly 3-10, at maturity globose, dark purplish brown, 8-10 mm. in diameter; flowers numerous, perianth segments green with coppery margins, obscurely 3-veined, subequal, 2-2.5 mm. long, narrowly lanceolate, acute or acuminate, chaffy; stamens (2-6) commonly 3, opposite the outer segments, 1/2-2/3 the length of the segments, the anthers shorter than the filaments; capsule oblong, somewhat exceeding the segments, subacute at the apex; seeds amber; the areole prominent, elliptical, .5 mm. long, apiculate at both ends.

Marshy and springy places, stream sides and meadows at all elevations.

20. J. brunnescens Rydb. Stems from rootstocks, loosely tufted, flattened, 40-60 cm. tall, 1-2 mm. in diameter; leaves flattened laterally, 3-4 mm. broad, apparently jointed, but the septa sometimes very obscure, half the length of the stem, auricles none, the sheathing blade scarious; inflorescence terminal, open, peduncles 1-3 cm. long, subtended by a leaf-like bract 2-5 cm. long; glomerules numerous, at maturity hemispherical, 6-8 mm. in diameter, dark brown; flowers numerous, perianth segments subequal, 2-2.5 mm. long, lanceolate, acuminate, firm, not scarious; stamens 1/2-2/3 the length of the segments, the anthers about 1/2 the length of the filaments; capsule oblong, subequal to or shorter than the perianth, deep purplish brown, obtuse; seeds dark brown, globose-elliptical, minutely apiculate, but obtuse at both ends, .4 mm. long.

Lake Pend Oreille at Sandpoint, Epling 10398.

Cyperaceae. Sedge family.

Grass-like or rush-like herbs with fibrous roots, either annual or perennial by more or less conspicuous rootstocks. Stems (culms) solid, rarely hollow, commonly triangular, often columnar, sometimes flattened. Leaves alternate, often 3-ranked, narrow, the blades usually flattened or trough shaped, the sheathing portion closed and completely tubular. Flowers perfect or imperfect, arranged in spikelets, each (rarely 2) in the axil of ~~each~~ a bract (scale or glume), the spikelets solitary or variously clustered, 1-many flowered. Bracts 2-ranked or spirally imbricated, persistent or deciduous. Perianth composed of bristles or scales or wanting. Stamens 1-3. Pistil 1, the ovary 1-chambered with a single ovule, the style 2-3-cleft. Fruit an achene, either 3-angled or lenticular, frequently flat on one surface, convex on the other.

0 Flowers unisexual, usually borne in separate spikes or if in
4 the same spike, the sexes separate; pistillate flower
8 enclosed in a sac-like perigynium, the styles protruding
through the orifice — 1. Carex

0 Flowers mostly perfect; pistillate flower not enclosed, usually
4 subtended by several bristles, bracts
2 Spikelets flattened, the ~~scales~~ in two opposite ranks
4 Spikelets in a terminal cluster, which is subtended by 2-3
8 leaflike bracts 2-3 times as long as the spikelets;
bristles none — 2. Cyperus

4 Spikelets in the upper axils, the subtending leaves
8 not markedly longer; perianth of barbed bristles — 3. Dulichium

2 Spikelets cylindrical, the ~~scales~~ bracts spirally imbricated
6 around the axis,
4 Flowers subtended by soft hairlike bristles very much
8 longer than the ovary, the inflorescence appearing
as a soft cottony tuft — 4. Eriophorum

4 Flowers subtended by barbed bristles about as long
8 as the ovary

6 Base of style swollen, leaving a pronounced conical
10 tubercle upon the ovary at maturity; spikelets
solitary, terminal — 5. Eleocharis

6 Base of style not swollen, completely deciduous or
10 sometimes leaving an acute beak on the ovary, not
however, constricted at the base; spikelets either
solitary or clustered

8 Spikelets solitary — 6. Scirpus
8 Spikelets numerous
10 Spikelets very slender, acute at both ends,
14 scarcely more than 1 mm. wide — 7. Rynchospora
10 Spikelets plump, 2-5 mm. in diameter — 8. Scirpus

6. 8. 9

1. Carex L.

Perennial grasslike herbs, commonly tufted, with triangular erect culms (stems) which are more or less roughened on the angles. Leaves 3-ranked, flat or channelled, sheathing at the base, the sheaths varied, sometimes splitting on one side to form hairlike fibrils. Plants usually monoecious, the flowers each subtended by a small usually paper-like or chaffy scale, assembled into spikes of varied size and shape, either wholly staminate or pistillate, or mixed, the sexes then usually separated, the staminate flowers either in the upper or lower half. Such spikes either sessile or stalked, either distinct and remote or assembled at the tip of the culm into a more or less dense cluster, rarely solitary, each subtended by a usually leaflike bract which may exceed the spike or the inflorescence, or which may sometimes be inconspicuous, membranous and resembling the scales. Staminate flowers composed of 3 stamens with hairlike filaments and linear anthers. Pistillate flowers formed of a single pistil bearing 1 style and either 2 or 3 stigmas (rarely 4), the style being either jointed with the ovary (and achene) and at length deciduous, or continuous with the achene and hardened and persistent in fruit; the ovary and style are enveloped by a sac-like organ, the perigynium, which may be either ovoid and more or less inflated, flat and disc-like or flat on one face but rounded on the other, both surfaces or one with or without parallel veins from top to bottom, in all cases tapering into a beak which may be either very minute or as long as the body of the perigynium or longer. Achene either triangular or flat and watch-shaped, completely enveloped by the perigynium which it rarely ruptures at maturity. Mature specimens are essential to a study of this genus.

0 1a. Spikes solitary and terminal or appearing so; achenes 4 always triangular; stigmas 3 — l.c

2 2a. Perigynia glabrous

4 Scales subequal, 3-8 mm. long, rarely more

6 Pistillate flowers usually solitary or two at the base of the spike, subtended by a scale which is 10 acute or abruptly awned; perigynia greenish or straw-color, almost beakless (~~Firmiculmes~~) (~~section Firmiculmes~~) 1. C. Geyeri

6 Pistillate flowers several at the base of the spike, each subtended by a thin blunt soon deciduous 10 scale; perigynia brown, tapering into a distinct beak (~~Arthrochlaenae~~) (~~section Arthrochlaenae~~) 2. C. nigricans

4 Scales very unequal, the lowermost leaflike, 3-6 cm. 8 long, resembling the bract which usually subtends a whole inflorescence, the others successively smaller 3. C. saximontana

2 2b. Perigynia hirtellous (~~Scripinae~~) (~~section Scripinae~~)

4 Plants 40-70 cm. tall; leaves 2-3 mm. wide 4. C. stenochlaena

4 Plants 10-30 cm. tall; leaves needle-like, less than 8 1 mm. wide 5. C. filifolia

0 1b. Spikes two or more, either stalked or sessile, remote or
4 congested into a terminal head which may resemble a single spike but on examination will be found to be compound and branched; achenes either triangular or flat; stigmas 2 or 3

2 3a. Stigmas prevailingly 2; achenes prevailingly flattened and
6 watch-shaped (occasional ones sometimes obscurely 3-angled)

4 Perigynia rounded at the tip and beakless (~~Dioclorae~~) ~~Section Dioclorae~~

6. C. aurea

4 Perigynia tapered at the tip to a distinct beak which
8 may be .2-.3 mm. long and entire or 1-2 mm. long and bidentate at the apex

6 4a. Lateral spikes rarely more than 1 cm. long, mostly 3-8 mm. long; perigynia tapering gradually into a beak which is seldom less than 1/3 as long as
10 the body, with sharp margins which are minutely ciliolate-toothed (except C. disperma which has a minute entire beak; C. illota has sometimes entire beak but both of these have small lateral spikes); scales brown or hyaline

8 Clusters usually crowded or dense, 3-6 cm. long, usually 1.5 cm. or more broad at the base, the perigynia tending to spread, thus giving a ragged bristling appearance to the cluster. (C. tribuloides may be sought here; it may be distinguished by the persistent non-jointed style which is longer than the achene and by the achene which is nearly twice as long as broad)

10 Leaf-blades prevailingly 3-5 mm. broad; 14 perigynia 3-4 mm. long ~~(Pauciflorae)~~

17 Perigynia narrowly ovate, the beak 14 as long as the body — 7. C. Cusickii

17 Perigynia broadly ovate, the beak 14 half as long as the body — 8. C. vulpinoidea

10 Leaf-blades prevailingly 5-8 mm. broad; 13 ~~(Multiflorae)~~ perigynia 4-5 mm. long — 9. C. stipata

8 Clusters either crowded and dense, in which case they are rarely more than 2.5 cm. long and less than 1.5 cm. wide at the base or else loose and sometimes more elongated, the individual spikes, which are mostly small and globose, being clearly separated, the lower often remote; perigynia tending to overlap in the denser clusters

10 5a. Spikes crowded into dense terminal clusters 14 usually ovoid

12 Staminate flowers, when present in a spike, borne at the tip of the spike above the pistillate flowers, recognizable in fruit by the otherwise empty scales which contain only the threadlike filaments from which the anthers have fallen.

14 Flowers 3-4 or fewer in each spike, one or two being pistillate, the perigynia rounded on both surfaces, strongly distended by the achene and almost beakless — 10. C. disperma

14 Flowers several to many, the perigynia flattened on one surface, not markedly distended by the achene, beaked.

12 Perigynia twice as long as the 20 scales, tending to lanceolate — 11. C. illota

16 Perigynia but little longer than 20 the scales, tending to ovate — 12. C. Hoodii

12 Staminate flowers borne at the base of the 16 spikes, usually not readily perceptible in fruit except in the terminal spike, the upper scales, however, always containing achenes when fully developed, the lowermost the naked filaments.

14 Leaves mostly longer than the culms; margins 18 of perigynia acute but not narrowly winged — 13. C. arcta

14 Leaves mostly shorter than the culms; margins 16 of perigynia very thin and sharp, narrowly winged (or very)

16 6a. Clusters essentially bractless, the 20 lowermost bract scarcely longer than the lowermost spike

18 Beak of the perigynium flattened and 22 minutely ciliolate-serrulate to the tip; individual spikes readily distinguished, the lowermost 4-6 mm. thick.

20 Perigynia 3-3.5 mm. long — 14. C. Bebbii

20 Perigynia 4-4.5 mm. long — 15. C. tribuloides

18 Beak of the perigynium not flattened, 22 minutely ciliolate-serrulate but hardly to the tip, often smooth in the upper third; spikes closely crowded into an ovoid head, the individual ones not readily distinguished, the lowermost mostly 3-4 mm. thick.

20 Scales completely covering the 24 mature perigynia, the beaks of which are scarcely 1 mm. long — 16. C. phaeocephala

20 Scales shorter than the mature 24 perigynia, the more elongate beaks of which protrude from beneath them

22 Both faces of the perigynia 26 clearly veined throughout, the flat surface with 3-5, the rounded with 7-9 veins — 17. C. abrupta

Flat face of the perigynium either veinless or with about 3 short veins at the base

Rounded face of the perigynium veinless or with 2-3 weak indistinct veins — 18. C. Preslii

Rounded face of the perigynium with 5-9 distinct veins

Perigynium walls thin and membranous, tending to remain green and contrasting with the brown scales, thus giving the cluster a variegated appearance; flat face veinless — 19. C. festivella

Perigynium walls firm, tending to assume about the same color as the scales, the clusters thus more or less uniform in color; flat face usually with 2-3 incomplete veins at the base — 20. C. pachystachya

6b. At least some clusters within each clump bearing bracts which are nearly as long as the cluster or longer

Achenes 4-4.5 mm. long, clearly 5-veined on both surfaces — 15. C. tribuloides

Achenes 3.5 mm. long, faintly 3-5-veined on the rounded, veinless on the flat surface — 21. C. arthrostachya

5b. Spikes small and often subglobose, more or less separated and distinct, the lowermost usually remote; culms mostly filiform

Leaves 2-5 mm. wide, usually as long as the culms or longer, soft and grasslike; perigynia mostly appressed ~~(section Bebbianae)~~.

Perigynia 3.5-4 mm. long, the beak about 1/3 as long as the body — 22. C. leptopoda

Perigynia 4-4.5 mm. long, the beak about 1/2 as long as the body — 23. C. Bolanderi

Leaves 1-2 mm. wide, usually shorter than the culms; perigynia mostly spreading

14 Beak of perigynium little ciliolate-serrulate or smooth;
18 both surfaces of body veined

16 Beak about .5 mm. long, erect, rather abrupt; spikes
20 about 3-3.5 mm. in diameter — 24. C. brunnescens

16 Beak about 1 mm. long, lightly recurved; spikes about 5
20 mm. in diameter — 25. C. laeviculmis

14 Beak of perigynium distinctly ciliolate-serrulate; flat
18 face of body veinless

16 Beak of perigynium bluntly bidentate, 1/4-1/3 the
20 length of the body, the ventral false suture wanting or inconspicuous; scales obtuse — 26. C. interior

16 Beak of perigynium sharply bidentate, the ventral false
20 suture conspicuous; scales mostly acute — 27. C. angustior

4 b. Lateral spikes mostly 1.5-3.5 cm. long, rarely as short as 1 cm.;
2 perigynia abruptly beaked with a minute smooth beak .2-.3 mm. long; scales purple ~~(erectiora Kunth)~~

section →

8 Flowering culms of current year arising from the center of the
12 previous year's tuft of leaves hence surrounded at the base by the dried remnants of the leaves of the previous year.

10 Plants strongly stoloniferous, the culms hence arising solitary or
14 few together; lowermost bract of the inflorescence normally much shorter than the inflorescence

12 Leaf-blades 2.5-5 mm. broad; culms acutely angled but nor margined;
16 lower bladeless sheaths at the base of the culm (usually purple, firm and scalelike) mostly 1-4 cm. long; culms 1-1.5 mm. thick

14 Scales narrowly ovate, acute, firm — 29. C. miserabilis

14 Scales ovate, obtuse or abruptly mucronate, their margins
18 thin, often hyaline — 30. C. gymnoclada

12 Leaf-blades 4-6 mm. broad; culms acutely angled, each angle
16 bordered with a narrow margin .2 mm. wide; lower bladeless sheaths at the base of the culm 1.5-10 cm. long, prominent; culms 1.5-2 mm. thick — 31. C. prionophylla

10 Plants more or less densely tufted; lowermost bract of the
14 inflorescence equalling or exceeding it

12 Perigynia veinless

14 Leaf-blades 2-3 mm. wide — 32. C. aperta

14 Leaf-blades mostly 6-8 mm. wide — 33. C. sitchensis

12 Perigynia with 3-5 veins on one face, usually about 5-7 (3) on the other

Insert

14 Spikes 6-8 mm. thick; scales 4.5-5 mm. long, 16 lanceolate — 34. C. nebraskensis

14 Spikes 3-5 mm. thick; scales 1.5-2.5 mm. long

16 Scales 1.2-1.5 mm. wide, nearly as broad as the perigynia, their rather broad margins opaque white (20) — 35. C. aquatilis

16 Scales rarely 1 mm. wide, clearly narrower than the perigynia, their margins little or not at all white (20)

18 Perigynia abruptly gathered at the base to a short stalk, the body of the perigynium elliptical, about half as broad as long; spikes 4-5 mm. thick (22) — 36. C. Kelloggii

18 Perigynia subsessile, the body broadly ovate or oval, about 2/3 as broad as long; spikes 3.5-4 mm. thick (22) — 37. C. lenticularis

8 Some or all of the culms of the current year arising at the side of the culms of the previous year hence not surrounded at the base by the dried tuft of the previous year (12) — 28. C. oxycarpa

9b. Stigmas prevailingly 3; achenes prevailingly 3-angled.

4/ Perigynia hirtellous

6 Culms normally 30-80 cm. tall; pistillate spikes prevailingly
10 1.5-4 cm. long, many-flowered [illegible]

8 Leaf-blades flat, usually 3-4 mm. wide — 38. C. lanuginosa

8 Leaf-blades inrolled, more or less trough-shaped,
12 rarely more than 2 mm. wide, usually less — 39. C. lasiocarpa

6 Culms normally 15-25 cm. tall, rarely more than 30 cm.;
10 pistillate spikes rarely 1.5 cm. long, usually less

8 Bracts of the inflorescence sheathing the stem most
12 of their length, [illegible] — 40. C. comosoides

8 Bracts of the inflorescence [illegible] leaf-like,
12 usually exceeding the inflorescence [illegible] — 41. C. Bossii

4 Perigynia glabrous

6 7a. Style jointed with the achene, withering and deciduous
10 in fruit

8 Lowest bract of the inflorescence sheathing at the base
12 for 2 millimeters or more

10 Perigynia beakless or nearly so [illegible] — 42. C. livida

10 Perigynia tapering into beaks 1 mm. long or more

12 Perigynia flat, veined but hardly ribbed; lowermost bracts much shorter than the inflorescence
16 [illegible] — 43. C. albida

12 Perigynia plump, distinctly ribbed; lowermost bracts usually twice as long as the
16 inflorescence [illegible]

14 Perigynia 3-3.5 mm. long, the beaks about
18 2 mm. long — 44. C. flava

14 Perigynia 2.5-2.8 mm. long, the beak scarcely
18 1 mm. long — 45. C. viridula

8 Lowest bract of the inflorescence not sheathing at the
12 base or but slightly

10 Pistillate spikes 3-6 cm. long, 6-7 mm. thick, rigidly
14 erect or nearly so, the perigynia spreading [illegible] — (46.) C. amplifolia

10 Pistillate spikes rarely more than 2 cm. long and if so
14 8-10 mm. thick and pendulous, not rigidly erect, perigynia overlapping

12 Freely stoloniferous, not tufted, scales light
16 brown, covering the glaucous perigynia — 47. C. limosa

12 Tufted, the scales deep purple, the perigynia
16 purple or brown, or if green, the mature perigynia twice as long as the scales ~~(Ithrastae)~~

14 Perigynia green, twice as long as the scales, the
18 spikes 8-10 mm. thick — 48. C. Mertensii

14 Perigynia brown or purple, longer than the
16 scales; spikes 4-6 mm. thick

16 Terminal spikes wholly staminate — 49. C. Montanensis l.c.

16 Terminal spikes mixed, the upper ones
20 pistillate — 50. C. atratiformis

6 7b. Style continuous with the achene, hardened and persistent
10 in fruit

8 Perigynia coarsely ribbed with 8-10 veins; mature spikes
12 ascending, subsessile or the lowermost stalked ~~(Physocarpae)~~

10 Lower perigynia not reflexed

12 Perigynia ascending; sheaths of lower leaves breaking
16 into fibrils where they split; rootstocks short with short ascending stolons; ~~leaves not conspicuously cross-veined~~

14 Perigynia 6-8 mm. long, abruptly contracted into
18 the beak — 52. C. vesicaria

14 Perigynia 8-10 mm. long, tapering into the beak — 53. C. exsiccata

12 Perigynia spreading; sheaths of lower leaves not
16 breaking into fibrils; rootstocks sending out long horizontal stolons; ~~leaves conspicuously cross-veined~~ — 54. C. rostrata

0 Lower perigynia reflexed — 51. C. retrorsa

9 Perigynia finely ribbed with 12-15 veins; mature spikes
12 drooping, stalked — 55. C. comosa

1. C. Geyeri Boott. ——→ Densely tufted and leafy, with stout woody rootstocks 2-3 mm. in diameter, the culms 15-35 cm. tall, sharply angled and very rough, wiry, slender, mostly equalled by the leaves; leaf-blades flat, 2-3 mm. in diameter, rough on the margins, developing after flowering; spikes solitary, terminal, 12-18 mm. long, slender and shining, chiefly staminate, the scales closely pressed and overlapping, blunt with thin margins, 6-8 mm. long, bearing usually one (2-3) pistillate flowers at the base, which is subtended and largely concealed by a membranous bract which is acute or abruptly awned, the awn flat and membranous, 2-8 mm. long or more; perigynia ovoid, plump, 4-6 mm. long, pale dull green becoming straw-color, somewhat narrowed at the base to an indistinct stalk, almost beakless, the orifice very minutely ciliolate-toothed. =/

Fish Lake, subalpine slope, 6800 ft.; South Baldy Mt., 6000 ft.; divide between the St. Joe and Clearwater Rs.

2. C. nigricans C. A. Meyer. ——→ Densely tufted, the rootstocks stout and woody, 1.5-2.5 mm. thick, the culms 5-40 cm. tall, stiffish, smooth, slender, longer than the leaves; leaf-blades 1.5-3 mm. wide, roughened, attenuate at the apex, flat but somewhat trough-shaped at the base; spikes solitary and terminal, having flowers of both sexes, the pistillate in the lower half, narrowly ovoid, 8-12 mm. long, dense, dark brown; scales oblong, 3.5-4 mm. long, very thin, dark brown, soon deciduous; perigynia 3.5-4 mm. long, elliptical, plump, dark brown and shining, veinless, narrowed at the base to a short stalk, tapering gradually into a smooth beak.

Subalpine meadows and moist ridges. Fish Lake, 6800 ft.; divide between the St. Joe and Clearwater Rs., 5200 ft.

3. C. saximontana Mack. ⟶ Caespitose, the culms 10-35 cm. tall, unequal, triangular, ascending, dilated beneath the spikes, the angles bearing a narrow hyaline wing in the upper parts; leaves mostly basal, longer than the culms or at least as long, pale green and glaucous, the blades 3-5 mm. broad, rough and sharp; spikes appearing as though terminal and solitary, mostly 3-5 flowered, the staminate flowers above the pistillate, the lowermost pistillate flowers of each spike subtended by a leaflike sheathing scale 3-6 cm. long, the upper by similar but successively shorter scales; perigynia 4 mm. long, veinless but 2-ribbed, plump and oval, narrowed equally at both ends to a short stalk and a short beak, the latter cylindrical, smooth, hyaline at the apex and toothed.

To be expected in dry soil in the prairie region.

4. C. stenochlaena (Holm) Mack. ⟶ Rootstocks densely matted, stout, the culms slender, stiffish, erect, much longer than the leaves, 40-70 cm. tall, roughened above, the lowermost leaves scale-like and reddish; leaf-blades flat, 2-3 mm. wide, the sheaths hirtellous on the side opposite the blade; staminate and pistillate spikes both solitary, borne on separate culms, the former about 2 cm. long, 3-5 mm. thick, the latter 2-3.5 cm. long, 4-5 mm. thick, narrowly cylindrical, borne on a stalk often nearly as long as the spike, subtended by a stiffish bract which is shorter than the inflorescence and hirtellous on the short hyaline sheath; scales 2-2.5 mm. long, oval, rounded at the apex with thin margins, reddish brown; perigynia flat, narrowly oval, 3.5-4 mm. long, hirtellous, the beak .5 mm. long, brown, subentire.

Upper Priest R., 3000 ft.; divide between the St. Joe and Clearwater Rs., 4800 ft.

5. C. filifolia Mutt. → Densely tufted, the culms 10-30 cm. tall, wiry, slender, smooth, bluntly angled, the basal sheaths splitting into fibrils, the old sheaths persistent, brown and conspicuous, the leaf-blades about as long as the culms, needle-like, less than 1 mm. thick, very sharp, wiry; spikes solitary, bractless, 12-25 mm. long, slender, the staminate flowers borne in the upper half, the pistillate flowers few, their scales broadly ovate, very obtuse, brown in the middle with conspicuous hyaline margins, concealing the perigynia; perigynia obovoid, 3 mm. long, thin, hirtellous, tapering in the lower part, tapering above to a beak scarcely .5 mm. long.

To be expected in dry soil in the prairie region.

6. C. aurea Mutt. → Rootstocks slender, whitish, elongated, the culms 15-30 cm. tall, smooth or nearly so, triangular, slender, leafy; leaf-blades soft, flat, 2-3 mm. wide, mostly smooth; staminate spikes solitary, sessile or shortly stalked, 5-8 mm. long, 1.5-2 mm. thick, tapering at both ends, sometimes bearing a few pistillate flowers at the apex; pistillate spikes 3-5, usually approximate, the upper tending to be sessile, the lower on slender stalks often as long as the spike, 8-15 mm. long, 3-5 mm. thick, loosely flowered, the flowers rarely more than 15; bracts sheathing the lowermost longer than the inflorescence; scales ovate to rotund, thin, brownish, sometimes mucronate; perigynia obovate, plump, dull green becoming brown or yellowish at maturity, glabrous, 2-3 mm. long, beakless.

Upper Priest R., 3000 ft., Epling 7569.

7. C. Cusickii Mack. ——→ Densely caespitose, the culms pliant, sharply angled, commonly 80-100 cm. tall, 2-2.5 mm. in diameter, roughened in the upper parts, much longer than the leaves; leaf-blades commonly 3-5 mm. broad, flat, soft, somewhat roughened towards the tips, the sheaths brownish dotted and with broad hyaline margins; spikes numerous, subglobose or ovoid, crowded into an irregular ragged cluster 3-4 cm. long, the lowermost spikes somewhat removed from the upper, 10-12 mm. long, all greenish, becoming light brown, the bracts acicular, weak and little developed; scales 3-4 mm. long, ovate, acute or acuminate, their midveins green, becoming brown, the margins thin and hyaline or brown towards the center; perigynia becoming brown, 3-4 mm. long, narrowly ovate or ovate-lanceolate, rounded at the base and gathered to a short stalk, acuminate to a stout beak about as long as the body, one face flat, nearly veinless, the other rounded with 3-4 weak veins. (C. teretiuscula var. ampla Bailey, C. diandra var. ampla Piper)

Upper Priest R., 3000 ft., Epling 7371; similar in appearance to C. stipata but more slender with smaller flowers and looser clusters.

8. C. vulpinoidea Michx. Tufted, with well developed rootstocks and stout roots, the culms 50-80 cm. tall, slender, sharply angled, roughened above; leaf-blades 2-4 mm. wide, long-tapering, shorter than the culms, roughened, the opaque thinner portion of the sheaths clearly gathered into numerous cross wrinkles, at least in the lower leaves; spikes numerous, subglobose, crowded into an irregular ragged oblong cluster 3-6 cm. long, 8-12 mm. wide; bracts acicular, inconspicuous; scales ovate, 2.5-3 mm. long, at least some prolonged into an awn, their midveins green, becoming brown, their margins hyaline or brown towards the center; perigynia 2.5-3 mm. long, broadly ovate, the body nearly circular, strongly flattened, abruptly narrowed to a beak about 1 mm. long, the margins very minutely serrulate, one face flat, veinless, the other rounded, with 3-5 weak veins.

Sand Point at margin of Lake Pend Oreille, Jones 9524. ~~Ehlers and Erlanson.~~ →

9. C. stipata Muhl. ——→ Caespitose, with short stout rootstocks, the culms commonly 50-70 cm. tall, 2-3 mm. in diameter, pliant, sharply angled, strongly roughened in the upper parts, usually longer than the leaves; leaf-blades commonly 6-8 mm. wide, flat, soft, somewhat roughened, the sheaths with conspicuous cross veins and broad hyaline margins; spikes numerous, subglobose or ovoid, crowded into an irregular ragged cluster 3-6 cm. long, greenish, becoming straw-color, the bracts acicular, weak and little developed; scales 3 mm. long, ovate, acute, the midvein green and firm, for the rest thin and hyaline or brownish-tinged; perigynia green or tinged with brown, rather glossy, 4-5 mm. long, ovate-lanceolate, rounded at the base and gathered to a short stalk, acuminate to a stout beak about as long as the body, one face flat, bearing usually 7-9 veins, the other rounded, bearing 9-15 clearly defined veins.

Common in swampy places and moist meadows. Orogrande Cr., 3000 ft.; Clarkia; N. Fork Clearwater R.

10. C. disperma Dewey. ——→ In large clumps, the rootstocks elongated, stoloniferous, the culms very slender, pliant and weak, scarcely more than .5 mm. in diameter, roughened above, 30-50 cm. tall, longer than the leaves; leaf-blades soft and grasslike, 1-2 mm. wide; spikes few, borne at the apex, the uppermost closer, the lower more distant, the inflorescence usually 2-3 cm. long, the bracts mostly wanting; each spike composed of one or two pistillate with usually one or two staminate flowers above, the scales ovate, acuminate, 2-2.5 mm. long, hyaline with green midribs; perigynia ovoid, plump, dull pale green, finely veined, very abruptly beaked, the beak minute, hyaline at the orifice.

Lamb Creek, Epling and Houck 10231.

11. C. illota Bailey. → Caespitose, with short slender rootstocks, the culms 10-40 cm. tall, slender, erect, roughened near the apex; leaf-blades 1-2 mm. wide, flat; spikes 3-5, ovoid, both staminate and pistillate or bearing only the latter, crowded into a dense dark brown terminal ovoid cluster 6-12 mm. long, the bracts scalelike; scales 2-2.5 mm. long, ovate, acute, the midvein green, the margins dark chestnut brown; perigynia 3-3.5 mm. long, shining, chestnut brown especially towards the apex, ovate-lanceolate, rounded at the base and gathered to a short stalk, usually flat on one surface, rounded on the other, both surfaces distinctly veined, the beak nearly smooth or very faintly toothed on the margins, 1/3-1/2 the length of the body.

Fish Lake Cr., 5000 ft., Epling and Houck 9502.

12. C. Hoodii Boott. → Densely caespitose, the culms erect, stiffish, roughened in the upper parts, rather bluntly angled, twice as long as the leaves, 30-50 cm. tall; leaf-blades mostly 1-2 mm. broad, flat but more or less trough-shaped towards the base, rough; spikes several, closely congested into an ovoid terminal head 10-18 mm. long, the bracts inconspicuous, shorter than the head; scales 3.5-4 mm. long, ovate, acute, the midrib green or paler brown, the margins thin, chestnut brown, the margins hyaline; perigynia 3.5-4 mm. long, narrowly ovate, narrowed toward the base, rather abruptly acuminate, flat on one face, rounded on the other, the veins faint or none, the center brown, the margins green, thin, sharp, finely toothed, the beak about half as long as the body, sharply 2-toothed at the apex.

Rocky ledge, Upper Priest Lake, Epling 7009.

13. C. arcta Boott. → Caespitose with very slender erect culms 30-50 cm. tall which are usually shorter than the leaves; leaf blades soft and grasslike, little roughened, pale green, 2-4 mm. wide, long-attenuate; spikes 5-15, 5-8 mm. long, more or less ovoid in outline, sessile, congested into a terminal cluster 1.5-3 cm. long which is subtended by one or two membranous attenuate bracts mostly shorter than the inflorescence; scales ovate, acuminate, hyaline with green midribs, 2-2.5 mm. long, somewhat tinged with brown; perigynia 2.5-3 mm. long, thrusting in all directions at maturity hence appearing bur-like, flattened on one surface, ovate, acuminate to a scabrous beak about 1 mm. long, bearing several veins on the rounded back and several incomplete ones at the base on the flattened surface, the beak 2-toothed. =1

In moist meadows.

14. C. Bebbii Olney. → Densely caespitose, the culms erect, slender, 20-60 cm. tall, sharply angled and roughened above; leaf blades 2-4.5 mm. wide; spikes green, tinged with brown, usually 5-8, ovoid or subglobose, compact, more or less distinct but crowded, 3-7 mm. long, blunt or rounded, aggregated into usually oblong clusters 8-20 mm. long, the bracts acicular, inconspicuous, but sometimes exceeding the inflorescence; scales 2.5-3 mm. long, ovate, very acute or acuminate, the midribs green, the margins thin and tinged with brown; perigynia 3-3.5 mm. long, green, tinged with brown, ovate, about twice as long as broad, narrowed toward the base, gradually acuminate, very flat, faintly veined on one face, the margins thin and sharp, toothed to the apex, the beak often not clearly marked. =1

Upper Priest R., ~~Epling 7398~~; Sand Point, ~~Jones 9517~~

15. C. tribuloides Wahl. → Caespitose, the culms 40-80 cm. tall, about 2 mm. thick, very sharply angled, roughened above; leaf-blades 3-4 mm. broad, somewhat roughened; spikes commonly about 12, ovoid, compact, 5-10 mm. long, each distinct but aggregated into a subcylindrical or ovoid cluster 3-3.5 cm. long, the bracts linear, expanded and hyaline at the base, rarely as long as the inflorescence, often not exceeding the lower spike; scales ovate, acute, 3-4 mm. long, hyaline except for the green midrib; perigynia 4-4.5 mm. long, dull straw-color, narrowly ovate, narrowed at the base, tapering gradually upward, thin and flat, the margins very sharp and thin, nearly a third as wide as the perigynium at the middle, finely toothed to the apex, the beak thus not ~~readily~~ clearly defined, the terminal teeth sharp, as long as the width of the beak.

St. Maries, ~~Ealing and Offord 2012~~; Blue Creek, ~~Leiberg 1327~~.

16. C. phaeocephala Piper. → Caespitose, the rootstocks densely matted, the culms stiffish, erect, exceeding the leaves, mostly smooth or roughened beneath the head, 10-30 cm. tall; leaf-blades 1.5-2 mm. wide, trough-shaped, roughened on the margins; spikes mostly 3-5, congested into more or less ovoid brown heads 10-20 mm. long, the bracts small and inconspicuous; scales ovate, acute, 3-3.5 mm. long, about equal to the perigynia, and hiding them, brown, with very thin hyaline margins, the midrib paler; perigynia narrowly ovate, 3.5-4 mm. long, green, then brown, thin, flat on one face and usually veinless, rounded on the other and faintly veined, tapering into a beak usually less than 1 mm. long, 2-toothed, hyaline at the orifice, the margins thin and sharp, finely toothed.

Snowy Top Mt., 6000 ft., ~~Anderson~~; Moscow Mt., ~~Cail~~.

17. C. abrupta Mack. ——→ Densely caespitose, with thickened and cormlike rootstocks, the culms 40-50 cm. tall, erect, slender, smooth, bluntly angled, longer than the leaves; leaf-blades flat, 1.5-3 mm. wide, somewhat rough; spikes 4-8, bearing both staminate and pistillate flowers, densely congested into terminal, ovoid heads 12-16 mm. long, nearly as wide when well developed, the bracts small and inconspicuous; scales narrowly ovate, mostly acute, brown and shining, paler along the rib, thin, about 3 mm. long; perigynia more or less spreading at maturity, narrowly ovate, 4 mm. long, tinged with brown at maturity, flat on one face having there 3-5 slender veins which extend to the beak, rounded on the other face, bearing about 9 slender veins, which are mostly distinct to the base, narrowed at the base, rather abruptly acuminate into a slender beak about 1.5 mm. long which is obliquely incised but otherwise entire, the margins very thin and sharp.

Revett Lake, 5000 ft., Epling, Houck and Putnam 10122.

18. C. Preslii Steud. ——→ Densely caespitose with thickish corm-like rootstocks, the culms slender, erect, 10-70 cm. tall, longer than the leaves especially in robust forms, light brown at the base, roughened above; leaf-blades flat, 1.5-4 mm. wide, the lowermost much reduced, the sheaths loose, obliquely cut and abruptly tapering into the diminished often awn-like blade; spikes 2-8, usually 4-5, bearing both staminate and pistillate flowers, ovoid, brown, 5-8 mm. long, congested into a terminal ovoid cluster 1-2 cm. long which is subtended by a short brown membranous bract; scales ovate, acute, about 3 mm. long, thin, brown throughout or with a green midrib, the margins hyaline; perigynia broadly ovate, 3.5-4 mm. long, green, becoming tan color, rounded at the base, flat on one surface which is usually veinless, the rounded surface veinless or with 2-3 weak veins; the margins thin and sharp, scabrous, abruptly beaked, the beak 1-1.5 mm. long, sharply 2-toothed. =1

Dry soils of open ridges.

19. C. festivella Mack. ——→ Caespitose, with slender erect culms 20-60 cm. tall, longer than the leaves, usually very rough just beneath the head, otherwise smooth; leaf-blades 1.5-3 mm. wide, somewhat roughened; spikes several, not readily distinguishable but aggregated into a dense ovoid or pyramidal head 10-15 mm. long, often nearly as wide, the bracts small and inconspicuous; scales thin, ovate, mostly obtuse, 2.5-3 mm. long, usually chestnut brown and rather glossy, sometimes tan-color, the midvein paler; perigynia green, becoming straw-color, ovate, appressed, 3.5-4.5 mm. long, flat on one face and usually without veins or weakly veined, rounded on the other face and 5-9-veined, the margins thin and sharp, finely toothed, rather abruptly acuminate into a beak about 1.5 mm. long.

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Meadows and mountain sides of Yellow Pine belt.

20. C. pachystachya Cham. ——→ Densely caespitose, with numerous fibrous roots, the culms erect, slender, longer than the leaves, smooth or slightly roughened, rather bluntly angled, 20-60 cm. tall; leaf-blades flat, mostly 2-4 mm. wide, somewhat rough; spikes 3-8, brown, bearing both staminate and pistillate flowers, congested into terminal ovoid heads 6-20 mm. long, the bracts small and inconspicuous; scales ovate, acute or acuminate, brown and shining, thin, 3-3.5 mm. long; perigynia spreading at maturity, ovate, 3.5-5 mm. long, flat on one face having there usually 3 incomplete veins which rarely reach the middle of the perigynium, rounded on the other face and bearing there about 7 slender veins which join near the base, green, becoming brown, rounded at the base, gradually acuminate into a slender beak about 1.5 mm. long which is obliquely incised but otherwise entire, the margins very thin and sharp;

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(incl. var. gracilis Mack.)

Frequent in wet meadows.

21. C. arthrostachya Olney. → Densely caespitose, the culms slender, erect, sharply angled, roughened above, 20-40 cm. tall; leaf-blades 2-3 mm. wide, roughened; spikes green but tinged with brown, mostly 6-10, ovoid or subglobose, 5-8 mm. long, congested into mostly ovoid heads 15-25 mm. long, the lowermost bracts acicular, usually readily perceptible, commonly as long as the inflorescence or longer, even 5-6 cm. long; scales ovate, very acute or acuminate, thin, 2.5-3 mm. long, green along the rib, the margins tinged with brown; perigynia lanceolate, or ovate, usually 3-4 times as long as broad, 3.5-4 mm. long, narrowed at the base to a short stalk, acuminate above the middle, very thin, the margins sharp and serrulate to the tip, the beak thus not clearly marked, both faces nearly veinless, the rounded face usually bearing about 5 very faint veins.

Meadows and boggy ground, frequent.

22. C. leptopoda Mack. → Rootstocks slender, elongated, the culms slender, 40-60 cm. tall, equalling or somewhat longer than the leaves, roughened toward the apex; leaf-blades mostly 3-5 mm. broad, flat, smooth, soft and grasslike; spikes commonly 4-6, narrowly oblong or ovoid, 5-8 mm. long, the upper approximate, the lower distant, forming an inflorescence 3-5 cm. long, the lowermost bract longer than the head it subtends, often nearly as long as the inflorescence; scales 2.5-3 mm. long, greenish-hyaline, broadly ovate, acute or shortly mucronate, the midrib ridged toward the apex and scabrous; perigynia narrowly ovate, greenish, somewhat glossy, 3.5-4 mm. long, flat on one face, rounded on the other, the margins sharp but not winged, scabrous to the tip, the veins faint, the beak about half as long as the body, sharply 2-toothed, the teeth scarcely .5 mm. long.

Usually in moist woods or shaded places; very similar in aspect to C. Bolanderi. →

→ Thatuna Hills, ~~Epling and Houck 004~~; Priest R. Exp. Sta., →

23. C. Bolanderi Olney. ⟶Rootstocks slender, elongated, the culms slender, 40-80 cm. tall, equalling or somewhat longer than the leaves, roughened toward the apex; leaf-blades mostly 3-5 mm. broad, flat, smooth, soft and grasslike; spikes commonly 5-6, narrowly oblong, 6-10 mm. long, the upper approximate, the lower distant, forming an inflorescence 3-5 cm. long, the lowermost bracts usually shorter than the spike it subtends; scales 3-4 mm. long, greenish hyaline, broadly ovate, acute or more commonly abruptly mucronate, the midrib ridged toward the apex and scabrous; perigynia ovate-lanceolate, greenish, somewhat glossy, 4-4.5 mm. long, flat on one face, rounded on the other, the margins sharp but not winged, scabrous to the tip, the veins faint, the beak about as long as the body, sharply 2-toothed, the teeth .5-.8 mm. long.

Usually in moist woods or shaded places, often amongst or under herbage. ⟶

⟶ Priest R. Exp. Sta.; Upper Priest R.; Cedar Mt.

24. C. brunnescens (Pers.) Poir. ⟶Caespitose in large clumps, the culms very slender, roughened above, longer than the leaves, pliant, less than 1 mm. thick; leaf-blades 1-2 mm. wide, long-attenuate, rough; spikes 4-8, usually about 4-6, forming a lax inflorescence 2-3 cm. long; the uppermost approximate, the lower more distant, sessile, subglobose or ovoid, 4-7 mm. long, few-flowered; ~~the~~ lowermost bract usually shorter than the inflorescence; scales 2-2.5 mm. long, hyaline with green midribs, oval or broadly ovate, obtuse; perigynia 2-2.5 mm. long, green or straw color, ovate, glabrous, flat on one surface, rounded on the other, faintly veined on both, rather abruptly beaked, the beak about .5 mm. long, 2-toothed.

Priest R. Exp. Sta., ~~Epling 5689~~; Upper Priest R., ~~Epling 7401~~ ⟶

25. C. laeviculmis Meinsh. → Caespitose, with slender rootstocks, the culms 30-60 cm. tall, weak and often drooping, roughened toward the apex; leaf-blades 1-2 mm. wide, soft, flat, mostly smooth; spikes commonly 5-6, subglobose, 4-6 mm. long, clearly separated, the lowermost especially remote, as much as 2.5 cm., forming a somewhat zig-zag inflorescence 3-5 cm. long, or more, the lowermost bract acicular, well developed, usually surpassing the spike it subtends, frequently nearly as long as the inflorescence; scales broadly ovate, 2-2.5 mm. long, hyaline or tinged with brown except for the rather prominent green midrib which does not quite extend to the tip; perigynia 2.5-3 mm. long, green and rather glossy, becoming straw color, broadly ovate, the body subrotund, broadest near the middle, one face usually flat, the other rounded, both faintly but clearly veined, tapering rather abruptly into a beak 1/3-1/2 as long as the body, its margins finely toothed;

In meadows and along small stream margins, especially characteristic of the latter.

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26. C. interior Bailey. → Densely caespitose, with slender rootstocks, the culms 20-40 cm. tall, very slender, rough at the apex; leaf-blades 1-2 mm. wide, flat or somewhat trough-shaped near the base; spikes 3-4, approximate at the tip of the culm, forming a narrow inflorescence 10-20 mm. long, the lowermost bract scarcely developed, resembling the scales, the terminal spike with both staminate and pistillate flowers, the latter towards the tip, the lateral spikes pistillate, subglobose, 3-4 mm. long; scales broadly ovate, obtuse, tinged with brown but mostly hyaline; perigynia brown, shining, 2.5-3 mm. long, ovate, the margins ribbed, flat on one face and there nearly veinless, rounded on the other and faintly veined, tapering rather abruptly into a short beak half as long as the body or less, finely toothed on the margin,

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Upper Priest R.; Sandpoint.

l.c. 27. C. Angustior Mack. → Densely caespitose, the culms 20-40 cm. tall, slender, sharply angled, roughened above, ~~much~~ longer than the leaves; leaf-blades flat but somewhat trough-shaped toward the base, 1-2 mm. wide, roughened towards the tips; spikes 3-6, approximate but not crowded, rather evenly spaced, forming a slender inflorescence 12-20 mm. long, the lowermost bract acicular, usually 5-10 mm. long, sometimes merely hyaline and scarcely developed; terminal spike usually with both staminate and pistillate flowers, the latter towards the tip, the lateral spikes mostly pistillate, 3-4 mm. long, subglobose in outline; scales ovate, acute, 1.5-2 mm. long, tinged with brown, mostly hyaline; perigynia spreading widely, ovate-lanceolate, brown, shining, about 3 mm. long, tapering into a beak nearly as long as the body, its margins finely toothed,

Near Pierce, ~~Epling and Houck 9668~~; Cocollala, ~~Eberle 344.~~ →

28. C. oxycarpa Holm. → Caespitose and stoloniferous with creeping slender rootstocks, the culms mostly 30-60 cm. tall, slender, sharply angled, nearly smooth; leaves few, noticeably shorter than the culms, their blades flat, 2-3 mm. wide, sharp, somewhat roughened, the sheaths splitting into a few loose filaments, the lowermost leaves firm and scalelike, brown, shining; staminate spikes mostly solitary, on short stalks, 1.5-4 cm. long, 2.5 mm. wide, brown; pistillate spikes usually 3-5, narrowly cylindrical, dark brown, 3.5-4 mm. thick, 1.5-3.5 cm. long, shortly stalked, or nearly sessile, the uppermost often partly staminate; lowermost bracts about equal to the inflorescence or exceeding it; scales narrowly oblong-ovate, firm, nearly as long as the perigynia, with green midribs and dark purple margins; perigynia crowded, overlapping, narrowed at both ends, flattened, faintly 2-3-veined, dull straw-color or greenish, abruptly beaked, the beak about .3 mm. long, not toothed.

Near Pierce, ~~Epling and Houck 9668~~; Orogrande Cr., 3000 ft., ~~Epling and Houck 9209~~; Forks of St. ~~Marys R., 1100 m., Leiberg 1174~~ → 3573 ft. Maries R.,

29. C. miserabilis Mack. ——→ Rootstocks stout, the culms 40-70 cm. tall, slender, somewhat roughened in the upper parts, sharply angled; leaves mostly shorter than the culms, the lowermost scale-like, deep purple, firm, roughened, the blades of the green leaves 3-5 mm. broad, roughened; staminate spikes solitary, short stalked, 1.5-2.5 cm. long, 3-5 mm. thick, tapering somewhat at both ends, purple; pistillate spikes 3-4, crowded, often staminate towards the tips, shortly stalked or sessile, 1-3 cm. long, 4-5 mm. thick; lowermost bracts shorter than the inflorescence; scales firm, 2.5-3 mm. long, oblong-lanceolate or narrowly ovate, acute, dark purple but lighter along the midrib; perigynia 3 mm. long, oval, dull, faintly 2-3 veined on one surface, narrowed at the base, minutely beaked, the beak subentire.

Snow Peak, 5500 ft., ~~Epling 10349~~; divide between the St. Joe and Clearwater Rs., ~~1680 m., Leiberg 1225~~ 4900ft.

30. C. gymnoclada Holm. ——→ Loosely tufted and strongly stoloniferous, the culms 30-50 cm. tall, stiffish, slender, sharply angled, roughened in the upper parts, usually twice as long as the leaves; leaf blades flat, moderately rough, 2.5-4 mm. broad, the margins somewhat revolute; staminate spikes usually solitary, short stalked, dark purple, 5-12 mm. long; pistillate spikes crowded, mostly short stalked, often staminate towards the tip, cylindrical, 8-20 mm. long, 4-6 mm. thick, densely flowered; lowermost bracts usually shorter than the inflorescence; scales ovate, 3.5-4 mm. long, deep reddish purple throughout but paler towards the margins, mostly obtuse or sometimes abruptly acuminate, the margins thin and hyaline; perigynia obovoid, flattened, 3 mm. long, straw-color or darker, faintly 2-3 veined on each surface, minutely beaked, the beaks minutely 2-toothed.

Near Priest R. Expt. Sta., Larsen.

31. C. prionophylla Holm. ——→ Tufted, with thick rootstocks, the culms 60-100 cm. tall, slender, very acute and slightly winged on the margins and very rough; leaves numerous, the lowermost scale like, firm, strongly reddish purple, 1-10 cm. long, the blades of the green leaves flat, 4-6 mm. wide, nearly as long as the culms, very rough and sharp; staminate spikes usually solitary, deep purple, shortly stalked, 20-25 mm. long, 3.5-4 mm. thick; pistillate spikes crowded, 3-4, subsessile, erect, cylindrical, often staminate towards the apex, 1-2.5 cm. long, 3-5 mm. wide; lowermost bract shorter than the inflorescence, the auricles at the base purple; scales oblong-ovate, obtuse, 2.5 mm. long, firm, deep purple or nearly black except the green or pale midrib, or black throughout; perigynia 3 mm. long, oval or obovate, dull green or tinged with brown, practically veinless, flattened but rather plump, the angles blunt, narrowed toward the base, minutely beaked at the apex, the beak not toothed.

Osier Cr., Clearwater For., 4000 ft., ~~Epling and Houck 9719~~; Lake Darling, ~~Christ 1266.~~ →

32. C. aperta Boott. ——→ Stoloniferous, the culms commonly 50-60 cm. tall, slender, pliant, sharply angled above, roughened near the apex; leaf-blades flat, roughened, the margins somewhat revolute, 2-3 mm. wide; staminate spikes usually solitary, 1.5-2.5 cm. long, 3 mm. wide, shortly stalked; pistillate spikes usually 2-3, cylindrical, 1.5-2.5 cm. long, 5-6 mm. thick, subsessile or shortly stalked; lowermost bracts about equal to the culms; scales oblong-lanceolate, or narrowly oblong-ovate, mostly acute or acuminate, firm, subequal to the perigynia, dark purple or the midrib green with very narrow thin margins; perigynia obovate, 3 mm. long, dull green, flattened but plump, veinless, rounded at the base, abruptly and minutely beaked, the beak slightly two-toothed.

Priest Lake; St. Maries.

33. C. sitchensis Prescott. ——→ Densely caespitose with elongated rootstocks, the culms 60-90 cm. tall or more, sharply angled, stiffish, roughened, reddish toward the base, the sheaths smooth, not splitting into fibrils; leaf-blades flat, or channelled at the base, mostly 6-8 mm. wide, roughened toward the apex; staminate spikes commonly 2-3, brown, 2.5-4.5 cm. long, 2.5-3 mm. wide, tapering upwards, subsessile; pistillate spikes widely separated, especially the lowermost narrowly cylindrical, 3-8 cm. long, 3.5-4 mm. wide, mostly on peduncles 1-2 cm. long; the uppermost, or sometimes all, partly staminate; lowermost bracts usually longer than the culms; scales oblong-lanceolate, or narrowly ovate, mostly acute, firm, subequal to the perigynia, deep purple except for the green midrib; perigynia crowded, overlapping, flat, pale dull green, veinless, oval, 3.5-4 mm. long, narrowed at the base, abruptly so at the apex, the beak about .3 mm. long, not toothed, the orifice oblique.

Upper Priest R., 3000 ft.; St. Maries.

34. C. nebraskensis Dewey. → Rootstocks creeping and stoloniferous, the culms 25-40 cm. tall, rather stout, rigid, mostly smooth or roughened in the upper part; leaves coarse, mostly 5-8 mm. wide, roughened, pale towards the base, the sheaths with thin white margins; staminate spikes 1-2, on short stalks, 1.5-2.5 cm. long, 4-5 mm. thick; pistillate spikes usually 3-4, cylindrical, sessile or shortly stalked, 1.5-4 cm. long, 6-8 mm. thick, mostly approximate, the flowers crowded; lowermost bract about equal to the culm; scales lanceolate, firm and chaffy, acute, deep purplish brown except the pale midrib, 4.5-5 mm. long, tending to spread at maturity; perigynia 3-3.5 mm. long, broadly oval or even rotund, flattened but plump, straw-color, one face usually 4-5-veined, the other about 7-veined, rounded at the base, abruptly beaked, the beak .3 mm. long, 2-toothed.

Wallace, Epling and Houck 10106.

35. C. aquatilis Wahl. → Rootstocks slender, sending forth long horizontal stolons, the culms caespitose, commonly 30-50 cm. tall, slender, sharply angled and smooth, purplish at the base; leaf-blades flat, 3-5 mm. wide; staminate spikes 1-2, slender, reddish, 2-3 cm. long, about 3 mm. wide; pistillate spikes cylindrical, mostly sessile, approximate, 1-5 cm. long, about 5 mm. thick; lowermost bracts longer than the culms; scales ovate, very blunt or rounded at the apex, subequal to the perigynia, deep purplish brown with green midribs and narrow papery white margins; perigynia 2.5 mm. long, oval, overlapping, flat, dull green, usually about 5-veined on one surface, 7-veined on the other, abruptly narrowed at both ends, the beak about .2 mm. long, not toothed.

Priest River Exp. Sta.

36. C. Kelloggii W. Boott. ——→ Caespitose with short ascending stolons, the culms slender, 30-70 cm. tall, roughened in the upper parts, sharply angled; leaf-blades flat, sharp, 1.5-2.5 mm. wide, pale green, rough, with rather prominent white margins on the sheaths; staminate spikes mostly solitary, 1-2.5 cm. long, 2.5-3 mm. thick, rather loose, brown; pistillate spikes usually 4-5, sessile, approximate and often overlapping, erect, 1.5-3.5 cm. long, 4-5 mm. thick, the perigynia ascending, overlapping; lowermost bracts exceeding the culms; scales 1.5-2.5 cm. long, mostly oval, blunt, firm, deep purple and somewhat shining except the pale midrib and very narrow thin white margins; perigynia strongly flattened with sharp margins, pale dull green, 2.5-3 mm. long, faintly 3-5-veined, the body about twice as long as broad, narrowed at the base to an abrupt short stalk, abruptly beaked, the beak minute, minutely 2-toothed.

Fish Lake, 6000 ft., ~~Epling and Houck 9615~~; Priest R. Exp. Sta., ~~Epling 5609~~; Upper Priest R., 3000 ft., ~~Epling 7405~~; Snow Peak, 5500 ft., ~~Epling 10342~~.

37. C. lenticularis Michx. ——→ Densely caespitose with numerous fibrous roots, the culms 30-60 cm. tall, often exceeded by the leaves, slender, nearly smooth or somewhat roughened above, rather blunt on the angles; leaf-blades very slender, attenuate, 1.5-2.5 mm. wide, somewhat roughened; staminate spikes 1-2, sometimes partly pistillate, 1-2.5 cm. long, 2-3 mm. thick, light brown, usually stalked; pistillate spikes approximate, shortly stalked, prevailingly green, cylindrical, 1-3 cm. long, 3.5-4 mm. thick, densely flowered; lowermost bracts longer than the inflorescence; scales oval, mostly obtuse, green or whitish along the middle, purple towards the margins, 2 mm. long; perigynia 2.5 mm. long, flattened but somewhat plump, dull pale green or white, oval, 3-4-veined on one surface, about 7-veined on the other, the body about 2/3 as broad as long, narrowed at the base and nearly sessile, minutely beaked, the beak subentire.

~~This and last species need further study for valid differentiae.~~

Priest Lake; Honeysuckle R.S.; Upper Priest R., 3000 ft.; Round Lake, 5000 ft., Benton Cr.; N. Fk. Clearwater R.; Lem [illegible] near Wallace.

38. C. lamuginosa Michx. ⟶Rootstocks stout, 1-2 mm. in diameter, creeping, the culms 30-80 cm. tall, reddish toward the base and usually sparingly decorated with fibrils from the ruptured sheaths, sharply angled and rough above; leaf-blades flat, 2-4 mm. wide, sharp and rough, the sheaths rather loose; staminate spikes usually 1, less often 2-3, 3-4 mm. wide, 2-3 cm. long; pistillate spikes commonly 2-3, cylindrical, 1-4 cm. long, 5-7 mm. wide, mostly sessile, the perigynia crowded, ascending; lower bracts mostly longer than the culms; scales ovate-acuminate, narrower than the perigynia but about as long, coppery, with thin margins; perigynia obovate, 3 mm. long, densely short pubescent, narrowed toward the base, abruptly narrowed and two-toothed at the apex. =1

Placer Cr., near Wallace, 3000 ft., ~~Epling and Offord 8113~~; Pierce, ~~Epling and Houck 9645~~; Moscow Mt., Gail.→

39. C. lasiocarpa Ehrh. ⟶ Caespitose, freely long stoloniferous, the stolons tough, slender, the culms mostly 40-80 cm. tall, slender, stiffish, mostly smooth, or lightly roughened, obtusely angled, purplish at the base, the sheaths breaking into few filaments; leaf-blades noticeably shorter than the culms, attenuate, usually less than 2 mm. wide, inrolled, roughened on the inrolled margins; staminate spikes usually 2, slender and erect, 2-6 cm. long; pistillate spikes mostly sessile, cylindrical, usually 2-4 cm. long, 5-6 mm. thick, erect, the perigynia crowded and ascending; lower bracts about as long as the culm; scales narrowly ovate, acute, about equal to the perigynia, green along the midribs with thin and brownish margins; perigynia ovoid, 3-3.5 mm. long, densely short pubescent, green, narrowed and rounded at the base, abruptly narrowed above to a short beak, 2-toothed at the apex.

St. Maries, Epling and Putnam 10277.

40. C. cincinnoides Mack. ——→ Tufted and strongly stoloniferous, the culms smooth, slender, 12-25 cm. tall; leaf-blades pale green, 2-5 mm. wide, rough; staminate spike solitary, subsessile, 10-20 mm. long, dark purple; pistillate spikes 1-2, crowded at the tip of the culm, 5-10 mm. long, 4-5 mm. thick, sessile or shortly stalked; bracts shorter than the inflorescence, thin and purple with scarious ciliolate margins, loosely sheathing at the base, the blades rudimentary; scales ~~narrowly~~ ovate, obtuse, narrower and shorter than the perigynia, deep purple with scarious colorless margins; perigynia 2.5-3 mm. long, membranous, overlapping, loosely pubescent, tapering at the base, very minutely beaked, the beak subentire; stigmas 3 (sometimes 4).

Dry pine woods near Coeur d'Alene; Bonners Ferry.

41. C. Rossii Boott. ——→ Densely caespitose with stout rootstocks, the culms slender, wiry, mostly smooth, 15-30 cm. tall, leafy; leaf-blades 1-2.5 mm. wide, roughened toward the apex; staminate spikes solitary, subsessile, 5-10 mm. long, 1 mm. thick; pistillate spikes few, approximate at the tips of the culms, subsessile, a solitary one ~~lower~~ usually borne at the base of the culm on an elongate stalk; scales ovate, 3-5 mm. long, strongly acuminate or even aristate, thin, green along the midrib, tinged with brown near the margin; perigynia 3-4 mm. long, stalked, hirtellous, subglobose, abruptly beaked, the beak about 1 mm. long, sharply and deeply 2-toothed.

In meadows and moist soil along trails.

42. C. livida (Wahl.) Willd. Rootstocks very slender, elongated, culms 10-50 cm. tall, smooth, brownish toward the base; leaf-blades pale green, shorter than the culms or longer, 1.5-2.5 mm. wide; staminate spikes solitary, 1.5-2.5 cm. long, sessile or on a short stalk, slender; pistillate spikes one or two, subsessile or shortly stalked, 1-2.5 cm. long, 5 mm. wide; bracts commonly as long as or longer than the inflorescence; scales ovate, brownish or green in the middle, the margins thin and hyaline; perigynia about 3.5 mm. long, acute at both ends, plump, pale glaucous-green, the veins hardly apparent, very slightly or not at all beaked; achenes triangular; stigmas 3.

To be expected in subalpine sphagnum bogs.

C. californica Bailey. Culms 20-45 cm. tall, sharply triangular, reddish-purple at the base; leaves flat with revolute margins, 1.5-5 mm. wide; staminate spikes 1.5-3.5 cm. long on peduncles as long or longer; pistillate spikes 2-4, brown, erect, separated by intervals of several centimeters, stalked, but much excelled by the leaflike subtending bracts, 1-3 cm. long, 3-5 mm. wide; scales ovate, obtuse, shorter than the perigynia, purplish-brown with a lighter midvein; perigynia 3.5-4 mm. long, membranous, yellowish-green, ovoid, plump, faintly nerved, abruptly and shortly beaked, the beak less than 1 mm. long.—Closely related to the last; ridge east of Pole Mt., 6000 ft., H. R. Flint.

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43. C. ablata Bailey. Rootstocks stout, elongated, the culms erect, slender, much exceeding the leaves, smooth and soft; spikes usually about 5, the upper clustered, shortly stalked or sessile, the lower remote, and elevated on slender stalks as long as 10 cm., ascending; terminal spikes staminate or nearly so, subsessile, 10-12 mm. long, 2.5-3 mm. wide, the lateral spikes mostly pistillate, subcylindrical, 12-15 mm. long, about 6-8 mm. thick; lowermost bracts much shorter than the inflorescence, sheathing the culm for 1-3 cm.; scales 2.5-3 mm. long, brown, thin, lanceolate, 4 mm. long, tinged with brown, rounded at the base, tapering into a beak 1-1.5 mm. long which is minutely 2-toothed at the apex.

Fish Lake, 6000 ft.; Stevens Pk.

44. C. flava L. → Tufted, with numerous fibrous roots, the culms very slender and wiry, 15-40 cm. tall, nearly smooth; leaf-blades noticeably shorter than the culms, flat, lightly roughened on the margins, 2-4 mm. wide; staminate spikes sessile or shortly stalked, usually solitary, 8-15 mm. long, 2-2.5 mm. wide, pale brown; pistillate spikes 1-4, usually crowded or the lowermost remote, sessile or nearly so, mostly ovoid in outline, 8-15 mm. long, 10-12 mm. wide, the crowded perigynia spreading and more or less deflexed; lower bracts often twice as long as the remainder of the culm, but usually spreading or deflexed; scales narrowly ovate, strongly acuminate, with green midribs and coppery margins, shorter than the perigynia; perigynia 5-6 mm. long, lightly inflated, yellowish, ribbed, abruptly narrowed into the beak which is 2-toothed and deflexed, 1.5-2 mm. long, continuous with the styles; stigmas 3. =1 or

Upper Priest R. on sandbars, 3000 ft., Epling 7470.

45. C. viridula Michx. → Tufted, the culms 12-20 cm. tall, smooth, bluntly triangular; leaf-blades 8-15 cm. long, 1.5-3 mm. wide, channelled, the sheaths not prolonged at the throat; terminal spike usually staminate, nearly sessile, 8-12 mm. long; pistillate spikes few or numerous, mostly oblong, 5-8 mm. long, 4-5 mm. wide, sessile, approximate, with spreading perigynia; bracts leaflike, ascending, the lowermost longer than the inflorescence, sometimes as much as 10 cm. long, sheathing at the base; scales, spreading, ovate, scarcely 2 mm. long, mostly obtuse, chaffy, straw-color with a green midrib and thin margins; perigynia pale green, 2.5 mm. long, obovate, many-veined, tapering at the base and abruptly beaked, the beak about 1 mm. long, twice-toothed at the apex and whitish.

Priest Lake; Sandpoint; Lake Pend Oreille.

[redacted] Steven's Peak,

46. C. amplifolia Boott. → Stoloniferous with stout stolons, the culms stout, 5 mm. thick, 50-100 cm. tall, sharply angled, rough; leaf-blades pale green, soft, roughened towards the tips, commonly 8-12 mm. wide; staminate spike solitary, 4-7 cm. long, 3-5 mm. wide; pistillate spikes 4-5, approximate, nearly sessile, long cylindrical, 3-6 cm. long, 6-7 mm. thick, stiffly erect or ascending, the perigynia numerous, spreading; lowermost bracts leaf-like, much exceeding the inflorescence; scales 2.5-3 mm. long, purple towards the margins, pale along the midrib, oblong-ovate, mostly acute; perigynia 3 mm. long, obovate, inflated and somewhat triangular, glabrous, abruptly tapered to a beak about 1 mm. long, which is usually somewhat curved, the tip subentire, oblique. =1

St. Maries, Epling and Offord 8584.

47. C. limosa L. → Strongly long stoloniferous, the culms arising obliquely at the base, very slender and graceful, 20-40 cm. tall, sharply angled, roughened above; leaves pale and glaucous, their blades channelled, 1-2 mm. wide; terminal spike staminate, 12-18 mm. long, 1.5-2 mm. thick, borne on a slender stalk usually as long as or longer than the spike; lateral spikes pistillate, usually 2-3, usually drooping, ovoid-cylindrical, 6-12 mm. long, 5-6 mm. thick, borne on slender stalks usually longer than the spike; lowermost bracts shorter than the inflorescence; scales oval, obtuse or mucronate, 3.5-4 mm. long, at length dull pale brown or tan color, firm; perigynia green then dull white, glaucous, subequal to the scales, oval, narrowed at the base, very minutely beaked, the beak subentire.

Sphagnum bog, Priest Lake, Epling 8582.

48. C. Mertensii Prescott. —→Caespitose and short stoloniferous, the culms 30-100 cm. tall, blades flat, smooth or slightly roughened, then 4-9 mm. wide, sharply angled, rough; spikes gracefully drooping and prevailingly pistillate and usually mixed, the staminate flowers occuring either at the base or at the tip of the spike, sometimes some spikes wholly staminate, either terminal or lateral in which case they are slender, about 1 mm. long and 2-3 mm. thick, the scales thin and membranous, the pistillate or mixed spikes prevailingly ovoid-cylinerical, 1-4 cm. long, 8-10 mm. thick, rounded at both ends, on slender peduncles, the upper or all sometimes crowded, the lower remote; bracts not sheathing, exceeding the inflorescence and drooping; scales oblong, mostly acute, 3-5 mm. long, usually deep purple with green midribs, sometimes pale brown; perigynia pale green, becoming tan color, broadly ovate, very thin and flat, 5-6.5 mm. long, faintly 3-veined, mimutely beaked, the beak subentire.

A handsome species very characteristic of subalpine streams and lake shores, readily distinguished by the drooping plump spikes.

49. C. montanensis Bailey. ——→ Tufted, the rootstocks elongated and tough, the culms slender, erect, 15-30 cm. tall, smooth; leaf-blades 2-3 mm. wide, soft, somewhat roughened, purplish toward the base, the lowermost scalelike; spikes all deep purple, the terminal ones staminate, 8-12 mm. long, erect, tapering below the middle, the lateral ones pistillate, 2-3, drooping, 10-18 mm. long, 4-5 mm. thick; lowermost bracts about equal to the inflorescence, sheathing at the base for 2-10 mm.; scales deep reddish purple, paler towards the margins, 3.5-4 mm. long, narrowly ovate, subacute, narrower than the perigynia; perigynia deep reddish purple, paler towards the margins, ovate, 4 mm. long, mimutely beaked.

Fish Lake 6700-6800 ft., on moist slopes, Epling and Houck 9824 ~~9566~~.

50. C. atratiformis Britt. —→Culms 30-60 cm. tall, slender, roughened in the upper parts, much longer than the leaves; leaf-blades flat, 3-4 mm. wide, somewhat roughened; spikes dark brown, more or less nodding, the terminal one either staminate or both staminate and pistillate, the staminate flowers then at the base of the spike, the lateral spikes 3-4, pistillate, 10-18 mm. long, 5-6 mm. thick, at least the lower on graceful slender stalks, all crowded towards the tip; lowermost bract usually longer than the inflorescence; scales ovate, 3-3.5 mm. long, abruptly and shortly acuminate, dark purple-brown throughout, their margins thin; perigynia 3.5 mm. long, obovate, dark purple-brown, dull, mimutely beaked, the beak subentire.

Fish Lake, 6000 ft., Epling and Houck 9594.

51. C. retrorsa Schw. Caespitose, the culms 50-100 cm. tall, mostly smooth; leaves appreciably exceeding the culms, commonly 5-10 mm. wide, scabrous on the margins, thin and flaccid, some roughened by transverse septa; staminate spikes 1-3, commonly 1.5-2.5 cm. long, slender; pistillate spikes commonly 3-5, cylindrical, commonly 2-5 cm. long, bristly, at least the lower perigynia reflexed, the upper spreading; scales of staminate spikes lanceolate with a green midrib, acute, 5-6 mm. long, those of the pistillate spikes oblong-lanceolate, mostly acute, thin and scarious, narrower than the perigynia and usually shorter; perigynia green or straw-color at the base, ovate, and somewhat inflated, membranous at the base, rather abruptly acuminate into a beak 2.5-3 mm. long which is sharply bidentate at the apex, the teeth erect, about .5 mm. long; achenes triangular; stigmas 3.

To be expected in swampy ground at lower elevations.

52. C. vesicaria L. → Rootstocks stout, 1.5-3 mm. in diameter, shortly creeping and stoloniferous, the culms 30-90 cm. tall, reddish towards the base, sharply angled and rough above; leaf-blades 3-6 mm. wide, flat, rough, the sheaths rather loose, usually splitting somewhat into fibrils; staminate spikes usually 2-3, very slender, 2-4 cm. long, 2-3 mm. wide; pistillate spikes 1-3, usually on short peduncles, erect, cylindrical, prevailingly 3-5 cm. long, 8-12 mm. wide, many-flowered, the perigynia ascending; lower bracts longer than the culms; scales narrowly ovate, 3-4 mm. long, very acute, coppery; perigynia narrowly ovoid, 5-6 mm. long, rounded at the base, rather abruptly tapering into the beak, 8-10-veined, shining, 2-toothed at the apex. → (C. monile var. pacifica Bailey). = 1

53. C. exsiccata Bailey. → Rootstocks stout, short creeping, 1.5-3 mm. in diameter, the culms 30-90 cm. tall, reddish towards the base, sharply angled and rough above; leaf-blades 3-6 mm. wide, flat, rough and sharp, the sheaths rather loose, usually splitting somewhat into fibrils; staminate spikes usually 2-3, very slender, 2-4 cm. long, 2-3 mm. wide; pistillate spikes 1-3, usually on short peduncles, erect, cylindrical, prevailingly 3-5 cm. long, 12-14 mm. wide, many-flowered, the perigynia ascending; lower bracts longer than the culms; scales broadly lanceolate, acuminate, 4-5 mm. long, thin, reddish; perigynia narrowly ovoid, 8-9 mm. long, somewhat inflated, lightly 8-10 ribbed, rounded at the base, tapering gradually above the middle, shining, 2-toothed at the apex. → (C. vesicaria var. major Boott.),

St. Maries, Epling and Offord 8029.

54. C. rostrata Stokes. → Caespitose and stoloniferous, the culms stout, mostly 80-100 cm. tall, leafy at the base, obtusely triangular, roughened below the lowest spike; leaf-blades mostly 6-8 mm. broad, flat, sharp, the edges and midribs rough, strongly cross-veined, staminate spikes usually 2-3, rarely 1, slender, 1.5-6.5 cm. long, 3-4 mm. wide, usually crowded and overlapping; pistillate spikes 3-5, mostly sessile, cylindrical, many-flowered, dense, prevailingly 4-7 cm. long, the perigynia tending to spread at maturity; the intermediate spikes are often composed of both staminate and pistillate flowers; lower bracts longer than the culms; scales oblong or oblong-lanceolate, acute, narrower than the perigynia and usually shorter, brownish; perigynia narrowly ovoid, straw-color or greenish, shining, rounded at the base, lightly inflated, gradually attenuate above or more often rather abruptly narrowed into the beak which is 2-toothed at the apex. → (C. utriculata Boott.). = 1 = 1

55. C. comosa ~~Boott.~~ Boott. → Caespitose, with elongate slender roots, the culms stout, 50-150 cm. tall, sharply angled, usually scabrous on the angles; leaves coarse, usually exceeding the culms, 7-12 mm. wide, scabrous on the margins, some at least roughened by transverse septa, the sheaths remaining entire; staminate spikes 1-4, 3-7 cm. long, 5-7 mm. wide, the scales lanceolate, 6-7 mm. long, sharply acuminate, scabrous on the margins; pistillate spikes usually 3-4, cylindrical, compact, 3-5 cm. long, 12-14 mm. wide, the lowermost usually nodding; scales ovate at the base, hyaline or greenish, acuminate into a rough awn 3.5-4 mm. long; perigynia lanceolate, rigid, 5-7 mm. long, greenish, narrowed at the base, many ribbed, reflexed at maturity making the spike bristly, acuminate into a smooth beak which terminates in two sharp pronglike spreading teeth 1.5-2 mm. long; achenes triangular; stigmas 3.

To be expected in ~~boggy~~ moist ground in association with Thuja plicata.

2. Cyperus L.

Herbs with triangular stems which are leafy at the base and bear one or more leaves toward the summit, subtending the inflorescence. Flowers perfect, in unequal umbels, one of the clusters usually being sessile. Spikelets laterally flattened, the scales which subtend the flowers either deciduous or persistent, concave, arranged in two ranks. Bristles none. Stamens 1-3. Style 2-3 cleft. Fruit an ovoid achene.

1. C. inflexus Muhl. ⟶ A low annual 3-15 cm. tall, the stems numerous, tufted; basal leaves subequal to the stems, 1-2.5 mm. wide, tapering gradually, very acute, those of the involucre similar, 1-4 cm. long, exceeding the flower clusters; umbels with 3-5 unequal rays, the remaining rays .1-3 cm. long; spikelets laterally flattened, 3-10 mm. long, 10-20 flowered, the scales 1.5-3 mm. long, deciduous at maturity, acuminate into a recurving rather rigid awn, strongly veined with usually 9 parallel veins; achenes 1.5 mm. long, obovate rounded-truncate at the apex.

Muddy places, Kootenai Co., Leiberg 300; Spokane R., Geyer 455; Rathdrum, Sandberg 719.

3. Dulichium Richard.

A perennial bog herb with columnar jointed stems which are equally leafy throughout or the lower leaves scale-like. ~~Leaves sheathing, flat.~~ Spikes axillary, the spikelets 2-ranked, somewhat flattened, linear. Scales lanceolate, closely appressed, decurrent, forming wing-like margins on the joints below. Perianth of 6-9 downwardly barbed bristles. Stamens 3. Style 2-cleft at the apex, persistent, forming a beak. Achene linear-oblong.

1. D. arundinaceum (L.)Britton. Stems 30-50 cm. tall, hollow, ~~jointed~~; lower leaves scale-like, sheathing, the upper with spreading blades, the sheathing portion 1.5-3 cm. long, subtruncate at the opening, the blades 3-8 cm. long, 5-8 mm. wide, flat, smooth, spikes ~~axillary in the upper leaves~~ 2.5-3 cm. long, the spikelets ascending, 1-1.5 cm. long, 1.5-2 mm. wide, 6-8 on each spike, acute; scales 6-7 mm. long with scarious margins, elliptical, closely appressed with several prominent parallel veins; bristles rigid, about equal to the scale; achene 2.5 mm. long.

In boggy meadows at lower elevations; seen only in the north.→

no 4 →Bog near Outlet, Priest Lake, Epling 7782; Granite Sta., ~~Epling~~; Sandberg 777.

4. Eriophorum L. Cotton Grass.

Perennial bog herbs with rootstocks, the stems erect, slender, 3-angled, the leaves linear, sheathing, the uppermost sometimes reduced to sheathing scales. Flowers perfect, in terminal spikes, these in an umbel, subtended by several leaf-like bracts, or solitary and naked. Scales spirally arranged, overlapping. Perianth of numerous soft bristles which are very prominent in fruit, forming a cottony tuft about the achenes. Stamens 1-3. Style 3-cleft. Achene 3-angled, ovoid.

o Spikelet solitary, not subtended by bracts; bristles brownish
4 at maturity — 1. E. Chamissonis

o Spikelets 2-several in an umbel, subtended by several
4 leaflike bracts; bristles white at maturity
2 Achene obovoid, obtuse; bristles less than 15 mm.
long — 2. E. viridi-carinatum

2 Achene linear-oblong, acute; bristles more than
6 15 mm. long — 3. E. tenellum

1. E. Chamissonis C. A. Meyer A stoloniferous herb 30-60 cm. tall, the stems erect, smooth; basal leaves soft, 15-30 cm. tall, sheathing, grooved on the upper surface, the upper leaves scale-like, sheathing for 4-5 cm., the free portion 1-1.5 cm. long; spikelet erect, without subtending bracts, the scales ovate-lanceolate, acuminate, purplish-brown with whitish margins, bristles numerous, 2-2.5 cm. long and brownish toward the base at maturity; achene oblong-elliptical, apiculate at the apex, 2.5 mm. long.

Subalpine bog, Snow Peak, 6000 ft., Epling & Houck 10339.

2. E. viridi-carinatum (Engelm.) Fern. Herb 40-60 cm. tall, the erect stems wiry, smooth; leaves flat, 10-25 cm. long, gradually reduced upwards, 3-4 mm. wide; spikelets several, on slender drooping scabrous peduncles .5-2 cm. long, borne in a terminal umbel which is subtended by several sheathing leaflike bracts 2-5 cm. long; scales green, ovate-acuminate, 4-5 mm. long, the midrib prominent to the tip; bristles 1-1.5 cm. long and white at maturity; achenes obovoid, obtuse or abruptly acute, 2.5 mm. long.

In bogs or marshy ground, 3000-4000 feet; seen only in the Kaniksu Forest. Hughes Fk. Mdw., Epling 7356; Bog above Cedar Cr., 4000 ft., Eldridge.

3. E. tenellum Nutt. Herb 30-60 cm. tall, stems slender, rough on the angles; leaves ~~in fascicles~~ triangular-channelled, 2-3 mm. wide; spikelets 3-8, ~~more~~ capitate or subumbellate, subtended by usually one leaflike bract; scales ovate or oblong, obtuse or subacute, greenish-brown, the midrib prominent, 4-5 mm. long; bristles 1.5-2.5 cm. long, white; achenes linear-oblong, tapering to a point.

Known in our area only from Clark's Fork, Christ 2042.

5. Eleocharis R. Br.. Spike Rush.

Annual or perennial herbs, usually of muddy or moist ground. Stems 3-angled or columnar, the leaves reduced to cylindrical sheaths at the very base. Spikelets solitary, terminal, erect, many-flowered, ovate or cylindrical, not flattened, not subtended by an involucre, the scales spirally arranged, overlapping; perianth of several downwardly barbed bristles, sometimes wanting. Stamens 2-3. Style 2-cleft, the achenes being then biconvex, or 3-cleft, the achene being then 3-angled. Base of the style persistent upon the achene as a small tubercle.

0 Stems 20-60 cm. tall, erect, gregarious but hardly tufted;

4 perennial by stout rootstocks

2 Fertile scales obtuse; tubercle elongate-pyramidal — 1. E. palustris

2 Fertile scales acutish; tubercle evenly triangular — 2. E. mamillata

0 Stems 20-30 cm. tall, erect or ascending, tufted, with

4 { fibrous roots, annuals or perennials by threadlike rootstocks

2 Tufts 2-8 cm. tall; spikes 2.5-5 mm. long; styles

6 3-cleft

4 Annual without stolons — 3. E. bella

4 Perennial with numerous slender whiplike stolons — 4. E. acicularis

Tufts 15-30 cm. tall; spikes mostly 8-12 mm. long;

styles 2-cleft

Spikes 2 1/2-3 times as long as broad, ovate-cylindrical;

bristles shorter than the achene — 5. E. Engelmannii

Spikes twice as long as broad, ovate, obtuse;

bristles longer than the achene — 6. E. obtusa

1. E. palustris (L.) R. & S. Perennial by widely creeping rootstocks, the stems columnar, soft, 25-60 cm. tall; leaves all basal, sheathing, 2-6 cm., subtruncate at the opening; spikes ovoid-cylindrical, obtuse, 8-12 mm. long; scales thin, mostly ovate, obtuse, purplish-brown with a green midrib and very thin margins; style 2-cleft; bristles 4 or sometimes 5; achenes yellow or brown, broadly obovoid, flattened, 1.2-1.7 mm. long, the tubercle at the apex of the achene conical, constricted at the base, about .5 mm. broad at the base.

Frequent in boggy ground or in sand bars along streams. Also present and intergrading is var. major Sonder, a larger, coarser plant with achenes 1.4-2.1 mm. long.

2. E. mamillata Lindb. f. Stoloniferous perennials, the stems stout but soft, compressed, 40-70 cm. tall; leaves all basal, drab or pale brown; spikes subcylindric, tapering above, 1-7 cm. long; fertile scales numerous, thin, pale-brown to purplish, narrowly ovate, obtuse to subacute, appressed, 2-4 mm. long; rarely 8; achenes yellowish, obovoid, 1.2-1.6 mm. long, the tubercle low, depressed-deltoid, sessile.

Occasional, in habitats of E. palustris as at marsh at St. Maries, Epling & Offord 8028.

3. E. bella (Piper) Svenson. Apparently annual, caespitose, with fine hairlike rootlets, stems 3-6 cm. tall, hairlike, soft, the sheaths loose, about 1 cm. long, often purplish; spikes narrowly ovoid, 2-3 mm. long, mostly acute; scales ovate, acute, with prominent midrib and thin purple margins, 2-2.5 mm. long; bristles 1-3; style 3-cleft; achenes whitish, elliptical, ribbed with several longitudinal ribs, these connected by very fine transverse ridges, about 30-40 in each series; style base globose.

Forks St. Maries R., Leiberg 1139.

4. E. acicularis (L.) R. & S. Small tufted perennials with mat-forming extensively creeping very slender threadlike stolons; stems 5-8 cm. tall, very slender, the sheaths about 1 cm. long; spikes narrowly ovoid, acute, 3-5 mm. long, the scales ovate, 2-2.5 mm. long, reddish-purple with a green midrib and very thin hyaline margins; bristles usually 3-4; style 3-cleft; achenes hardly 1 mm. long, elliptical, green, ribbed with several longitudinal ribs, connected by minute transverse ridges about 40-50 in each series; style base conical.

Pend Oreille R., Lyall; Upper Priest Lake, Epling 7819.

5. E. Engelmannii Steud. var. monticola (Fern.) Svenson. An annual tufted herb with fibrous roots, the stems 3-30 cm. tall, the sheaths 1-3 cm. long; spikes ovate-cylindrical, acute rather than obtuse, 2 1/2-3 times as long as broad, rounded at the base, 8-12 mm. long; scales broadly ovate, brown with paler margins and midribs; style 2-cleft; achenes 1.5 mm. long, straw-colored, broadly obovate, flattened, shining, the margin very acute, the tubercle about 1/4 the length of the achene, hardly constricted, broadly triangular, drying brown; bristles 6-8, hardly exceeding the achene or shorter.

Widely scattered but infrequent; reported from near the mouth of the St. Joe R. by Piper. South to N. Mex. and Ariz.

6. E. obtusa (Willd.) Schultes. A tufted annual with fibrous roots, the stems very unequal in length in each tuft, 3-25 cm. tall, the sheaths 1-3 cm. long; spikes ovate, very obtuse, about twice as long as broad, 3-10 mm. long on the same plant, obtuse, rounded at the base; scales obovate, 2-2.5 mm. long, reddish-purple with a green midrib and thin margins; style 2-cleft; achene 1.5 mm. long, straw-colored, broadly obovate, flattened, shining, the margin very acute, the tubercle about 1/3 the length of the achene, broadly conical, lightly constricted at the base, drying brown; bristles 6-8, exceeding the achene.

Muddy places, valley of Coeur d'Alene R., Sandberg 649; Kooskooskee Valley, Geyer 494; Lake Pend Oreille, Leiberg 311; Bungalow N. S., Epling & Houck 9290.

6. Scirpus L.

~~Annual or perennial~~ herbs with leafy stems or the leaves reduced to short basal sheathing scales. Spikelets mostly cylindrical, not flattened, solitary and terminal or numerous, arranged in simple or compound umbels, ~~which may or may not be subtended by bracts~~. Scales spirally arranged, overlapping. Flowers perfect; perianth of several bristles. Stamens 2-3. Style 2-3-cleft, not swollen at the base, deciduous, sometimes leaving a short acute mucro on the achene.

0 Stems leafy, the leaves 6-12 mm. wide, those ~~especially~~ of the
4 inflorescence often ~~exceeding~~ the stems — 1. S. microcarpus

0 Stems naked, the leaves reduced to basal sheathing
4 scales or if present, linear, scarcely 1 mm. wide.

2 Spikelets solitary

4 Stems 30-60 cm. tall; spikelets 10 mm. long — 2. S. subterminalis
4 Stems 3-6 cm. tall — 3. S. nanus

2 Spikelets numerous or several
4 Spikelets several in a small subterminal
8 cluster — 4. S. americanus
4 Spikelets numerous in terminal compound
8 umbels — 5. S. validus

1. S. microcarpus Presl. ⟶ Perennial herb, the stems .5-1.5 m. tall, leafy throughout, often surpassed by the leaves; leaves flat, 8-12 mm. wide, scabrous on the margins; spikelets 3-4 mm. long, numerous, borne in loose spreading compound umbels; umbels subtended by several unequal leaflike bracts which often exceed them; scales 2 mm. long, broadly ovate, obtuse but mucronate, the midrib green, the margins very thin, now colorless, now flecked with green, the spikelets then appearing dark green; bristles commonly 4, somewhat longer than the achene; stamens 2; style 2-cleft; achene obovate, whitish, shining, flat on one side, convex on the other, acute at the apex.

Common in seepage spots and boggy places especially within the Thuja-type.

2. S. subterminalis Torr. ⟶ A perennial herb usually growing in shallow water of marshes, the stems slender, columnar, 1-1.5 mm. in diameter; leaves slender, linear, channeled, 15-30 cm. long, scarcely 1 mm. wide; spikelet about 10 mm. long, ovoid, solitary, terminal but subtended by a short stiffish bract 1.5-3 cm. long which appears as a continuation of the stem; scales elliptical or narrowly ovate, acute, membranous, straw-colored with a green midrib; bristles about 6, downwardly barbed, subequal to the achene; stamens 3; style 3-cleft; achene obovate, 3-angled, 2-2.5 mm. long, sharply beaked, dark-brown at maturity.

Marshes, Kootenai Co., Leiberg 304; Granite Sta., Sandberg 781.

3. S. nanus Spreng. → A small densely tufted annual with fibrous roots, the stems slender, erect, 3-6 cm. tall, the leaves reduced to sheathing basal scales; spikelets greenish, solitary, terminal, 3-5 mm. long, ovoid; scales ovate, the upper rather acute; achene ovoid, shining, straw-colored, the bristles 6-8, somewhat longer than the achene.

Reported from near Viola by Piper.

4. S. americanus Pers. → Perennial growing in shallow water, as much as a meter tall, having stout running rootstocks, the stems sharply angled; leaves 1-3, sheathing and basal; spikelets several, ovoid, .5-1 cm. long, borne in a sessile cluster apparently lateral in the tip of the stem, the involucral leaf acute; scales ovate, sparingly ciliate, 2-cleft at the apex; style 2-cleft.

Swamp, Bonners Ferry, Christ 1438.

5. S. validus Vahl. Bulrush. Perennial with stout branching rootstocks, the stems columnar, 1.5-3 m. tall; leaves reduced to sheathing basal scales which are leathery and brown, 5-10 cm. long or more; spikelets numerous, borne in terminal compound umbels; the umbel subtended by an erect stiffish bract 3-8 cm. tall which appears to be a continuation of the stem; spikelets elliptico-cylindrical, 10-15 mm. long, 2-5 in a cluster; scales ovate, membranous, tipped with a short mucro, the margins erose-ciliate; style 2-cleft; achene biconvex but 3-angled, obovate, dull straw-color, 2.5 mm. long, the bristles about 6. (S. occidentalis Chase).

Occasional in shallow water of lagoons or in marshes. Priest Lake near Coolin, Epling.

7. Rynchospora Vahl.

Tufted perennial rush-like herbs with short rootstocks. Leaves slender, flat. Spikelets slender, spindleshaped, clustered at the apex of the stems. Bracts thin, 1-veined, imbricate. Perianth of several slender barbed bristles. Stamens 3. Style 2-branched at the apex. Achene lenticular, conspicuously capped by the conical persistent base of the style.

1. R. alba (L.) Vahl. Pale green erect ~~tufted~~ herbs with ~~short~~ slender rootstocks, the culms 15-40 cm. tall, columnar, striate, smooth, very slender and pliant; leaves linear, 1-2 mm. wide, mostly shorter than the culms; spikelets in terminal clusters, commonly with 1-2 lateral ones, buff-colored or tan, becoming nearly white, 3-4 mm. long, spindle-shaped, very acute, shining, bracts ovate or ovate-lanceolate, acute; bristles several, downwardly barbed, about as long as the mature fruit; achene obovate, smooth, brown; tubercle about half as long as the achene.

Muddy ground near Wallace, Epling.

Gramineae (Poaceae) Grass Family*

Herbs with round, usually hollow stems, "culms", (solid in Andropogon) solid nodes, and 2-ranked, parallel veined leaves composed of two parts, the sheath, enveloping the culm, its margins overlapping or grown together, and the blade, bearing on the inside, at the junction of the sheath and blade, a membranaceous or hairy appendage, the ligule. Flowers perfect, arranged in spikelets, these composed of few to many 2-ranked bracts alternate on a central axis, the rachilla, the lower two bracts, the glumes, empty, the succeeding ones, the lemmas, subtending a perfect flower, and between the flower and the axis an additional bract, the palea; the lemma, palea, and the inclosed flower compose the floret; stamens usually three; pistil 1, with a 1-celled, 1-ovuled ovary, 2 styles, and usually plumose stigmas; fruit a caryopsis with starchy endosperm and a small embryo at the base on the side opposite the hilum.

Key to the Tribes.

0 Spikelets jointed above the glumes (see also Alopecurus and Chlorideae); no sterile lemmas below the fertile florets (see also Phalaris.)

2 Spikelets 2 to several flowered

4 Spikelets sessile

6 Spikelets on opposite sides of the rachis;
10 spike single and terminal — II. Hordeae

6 Spikelets in two rows on one side of the
10 rhachis; spikes racemose — V. Chlorideae

4 Spikelets pedicelled

6 Lemmas awnless or awned from the tip; glumes
10 shorter than the spikelet — I. Festuceae

6 Lemmas awned from the back (awnless or nearly so in Sphenopholis, Koeleria, and Trisetum Wolfii); glumes equaling or exceeding the florets
10 — III. Aveneae

2 Spikelets 1-flowered

4 Spikelets with 2 rudimentary florets below the
8 fertile one — VI. Phalarideae

4 Spikelets with no rudimentary florets below the
8 fertile one — IV. Agrostideae

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*Text contributed by Mr. Jason R. Swallen

0 Spikelets jointed below the glumes, falling entire, a sterile
4 lemma below the fertile one (see also Sphenopholis and Alopecurus)

2 Glumes membranaceous, the fertile lemma indurate,
6 awnless — VII. Paniceae

2 Glumes coriaceous, the fertile lemma thin and
6 hyaline, awned — VIII. Andropogoneae

Key to the Genera.

I. Festuceae.

0 Lemmas awnless

2 Lemmas 3-nerved

4 Rachilla glabrous; panicle not plumelike — 5. Eragrostis

4 Rachilla long silky; panicle plumelike — 8. Phragmites

2 Lemmas 5-many nerved

4 Culms bulbous at the base; sheaths closed — 9. Melica

4 Culms not bulbous at the base

6 Spikelets crowded in dense glomerules at

10 the ends of panicle branches — 6. Dactylis

6 Spikelets usually not dense, ~~evenly~~

10 evenly distributed throughout the panicles

8 Lemmas rounded on the back, the nerves

12 parallel — 3. Glyceria

9 Lemmas keeled, the nerves converging

12 toward the summit — 4. Poa

0 Lemmas awned (awnless in Festuca elatior and Bromus brizaeformis)

2 Lemmas entire, awned from the tip

4 Spikelets all fertile, panicles open — 2. Festuca

4 Spikelets sterile and fertile intermixed;

9 panicle spikelike — 7. Cyanosurus

2 Lemmas minutely bifid, awned from between the teeth — 1. Bromus

II. Hordeae

0 Rachis disarticulating at maturity, spikelets 3 at a node — 12. Hordeum

0 Rachis continuous, spikelets 1 or 2 at each node (sometimes 4 more in Elymus condensatus)

2 Spikelets 1 at each node

4 First glume wanting; spikelets placed edgewise to the 8 rachis — 13. Lolium

4 First glume present; spikelets placed flatwise to 8 the rachis — 10. Agropyron

2 Spikelets usually 2 at each node — 11. Elymus

III. Aveneae.

0 Lemmas awned (short or wanting in Trisetum Wolfii)

2 Lemmas awned from between the teeth of a bifid apex,

6 the awn flattened, twisted — 18. Danthonia

2 Lemmas dorsally awned, the awns not flattened

4 Lemmas keeled, awned from above the middle — 15. Trisetum

4 Lemmas rounded on the back, awned from below 8 the middle — 17. Deschampsia

0 Lemmas awnless

2 Spikelets jointed above the glumes, these similar in 6 shape — 14. Koeleria

2 Spikelets jointed below the glumes, these dissimilar,

6 the second widened above — 16. Sphenopholis

IV. Agrostideae.

0 Spikelets ~~articulate~~ jointed below the glumes — 22. Alopecurus

0 Spikelets ~~articulate~~ jointed above the glumes

2 Lemmas indurate with a distinct sharp or blunt pointed, 6 hairy callus

4 Awns deciduous — 25. Oryzopsis

4 Awns persistent — 26. Stipa

2 Lemmas membranaceous, the callus not well developed

4 Lemmas awned

6 Callus copiously hairy, the hairs sometimes as long as the 10 < spikelet; lemmas awned from the back below the middle, the awns well developed — 19. Calamagrostis

6 Callus hairs wanting; lemmas awned from the back just 10 below the tip, the awns not more than 1 mm. long — 21. Cinna

4 Lemmas awnless

6 Glumes abruptly awned, the keels hispid; spikelets in 10 dense cylindrical panicles — 23. Phleum

6 Glumes awnless, not hispid; spikelets in open panicles, 10 or if contracted, not dense

8 Lemmas hyaline, thinner than the glumes in texture; 12 glumes exceeding the florets — 20. Agrostis

8 Lemmas similar to the glumes in texture; glumes much 12 shorter than the spikelets — 24. Muhlenbergia

V. Chlorideae.

0 Spikelets broad, heartshaped, awnless; glumes equal, boatshaped — 27. Beckmannia

0 Spikelets narrow, awned; glumes unequal, narrow — 28. Spartina

VI. Phalarideae

0 One genus — 29. Phalaris

VII. Paniceae.

0 Spikelets subtended by bristles, the bristles persistent — 32. Setaria

0 Spikelets not subtended by bristles

2 Sterile lemma awned; tip of the palea not inclosed by the 6 fertile lemma — 31. Echinochloa

2 Sterile lemma awnless; tip of the palea inclosed by the 6 fertile lemma — 30. Panicum

VIII. Andropogoneae.

0 One genus — 33. Andropogon

1. Bromus L. Bromegrass.

Annuals or perennials with narrow or open panicles of large spikelets. Spikelets several flowered, the rachilla disarticulating above the glumes and between the florets; glumes acute or acuminate, unequal, the first 1-3 nerved, the second 3-5 nerved; lemmas keeled or rounded on the back, awnless or usually awned from between the teeth of the bifid apex.

0 Spikelets distinctly flattened; glumes and lemmas keeled

2 Sheaths and lemmas glabrous — 1. B. polyanthus

2 Sheaths and lemmas pubescent

4 Sheaths densely soft-pubescent; blades erect,
6 pubescent like the sheaths, 2-5 mm. wide — 4. B. ~~subvelutinus~~ brevianustatus

4 Sheaths pubescent but not velvety; blades spreading,
8 < scabrous, at least some of them more than 5 mm. wide

6 Awns less than 7 mm. usually about 5 mm. long — 2. B. marginatus

6 Awns more than 7 mm. long — 3. B. carinatus

0 Spikelets not flattened; glumes and lemmas rounded on the
4 back, or keeled only toward the summit

2 Plants perennial; native species (except B. inermis)

4 Rhizomes present; lemmas awnless or short-awned — 5. B. inermis

4 Rhizomes wanting; lemmas long-awned

6 Ligule prominent, 2-3 mm. long; awns more than
10 5 mm. long — 6. B. vulgaris

6 Ligule short; awns less than 5 mm. long — 7. B. ciliatus

2 Plants annual; introduced species

4 Lemmas narrow; second glume 1 cm. or more long

6 Panicle branches slender and flexuous; awns 1-1.5
10 cm. long — 8. B. tectorum

6 Panicle branches relatively stout, not flexuous;
10 awns 3-4 cm. long — 9. B. rigidus

4 Lemmas broad; second glume not over 8 mm. long

6 Lemmas awnless — 10. B. brizaeformis

6 Lemmas awned

8 Panicles contracted, dense — 11. B. ~~hordeaceus~~ mollis

10 Panicles open, the branches spreading

12 Sheaths glabrous; lemmas glabrous, the
16 margins inrolled below, the rachilla visible — 12. B. secalinus

12 Sheaths pubescent; lemmas glabrous or
16 scabrous, the margins not inrolled or only slightly so, the rachilla not visible — 13. B. commutatus

1. B. polyanthus Scribn. ——→Plants perennial; culms slender, erect or decumbent at the base, 60-120 cm. tall; sheaths glabrous, more or less keeled; leaves flat, lax, scabrous, 15-25 cm. long, as much as 1 cm. wide; panicles rather narrow, about 20 cm. long, the branches mostly stiffly ascending or spreading, some of them 10 to 12 cm. long, shorter ones intermixed, bearing toward the end 1-3 spikelets; glumes acuminate, the first 8 mm. long, 3-nerved, the second 10 mm. long, 5-nerved; lemmas lanceolate, keeled, glabrous, 10-15 mm. usually about 12 mm. long, the awns about 5 mm. long.

Open woods and slopes. St. Joe Nat. For., 5800 ft.; Clarkia, 2700 ft.

2. B. marginatus Nees. ——→Similar to B. polyanthus but differing in having pubescent sheaths and usually rather densely pubescent lemmas. Intergrading specimens occur rather frequently.

Open woods, rocky hillsides, and meadows. More common than the preceding species.

3. B. carinatus Hook. and Arn. ——→Plants perennial or annual; culms rather stout, 50-120 cm. tall; sheaths pubescent, sometimes nearly glabrous, the lower overlapping; blades scabrous or pubescent, 10-25 cm. long, 4-12 mm. wide; panicles 10-20 cm. long, the branches ascending or spreading, the lower often long and drooping; spikelets 3-5 cm. long; glumes lanceolate or acuminate, smooth or scabrous, the first 3-nerved, 10-15 mm. long, the second 5-7 nerved, 12-20 mm. long; lemmas keeled, lanceolate, pubescent, the lower 15-20 mm. long, the awn 7-15 mm. long.

Rocky hillsides and waste places. Wallace, 2728-4000 ft.; Valley of Clearwater R.

brevaristatus Buckl.

4. B. ~~subvelutinus Shear~~. ——→Short lived perennials ; culms 50-100 cm. tall; sheaths densely soft-pubescent; blades narrow, rather stiffly erect, usually densely soft-pubescent, 10-20 cm. long, 2-5 mm. wide; innovations often numerous forming a small dense tuft; panicles narrow, somewhat nodding, 10-20 cm. long, the branches usually short and appressed; spikelets 2-3 cm. long, shorter than the other species of this group; glumes acute or acuminate, pubescent or glabrous, 8-15 mm. long, the second a little longer than the first; lemmas keeled, pubescent, the lower 10-15 mm. long, the awn 5-7 mm. long.

Dry open woods and rocky hillsides. ——→

10 H ——→ Lake Coeur d'Alene, ~~Chase 4994, 4995~~ **Chase 4994.**

5. B. inermis Leyss. Common Bromegrass, Smooth Brome, Hungarian Brome. Plants perennial with rhizomes; culms rather stout, erect, 40-70 cm. tall, or sometimes taller; sheaths smooth, overlapping, especially the lower ones; blades flat, scabrous, 10-25 cm. long, 4-12 mm. wide; panicles open, 10-20 cm. long, the branches in rather distant fascicles; spikelets 2-3 cm. long; glumes blunt, scabrous on the nerves, the first 5-8 mm. long, 1-nerved, the second 7-10 mm. long, 3-nerved; lemmas glabrous or more or less pubescent all over the back on the basal portion, 10-12 mm. long, awnless or short-awned.

Very robust specimens may be larger throughout. Introduced from Europe and cultivated as a forage grass. Sometimes escaped in waste places. Coeur d'Alene; Kaniksu National Forest; Fox Cr.

6. B. vulgaris (Hook.) Shear. ——→ Plants perennial; culms slender, erect, usually solitary, 50-150 cm. tall, pilose at and below the nodes; sheaths, especially the lower, pilose with spreading or reflexed hairs; ligules prominent, truncate, 2-3 mm. long; blades flat, erect or ascending, somewhat flexuous, 10-25 cm. long, 5-10 mm. wide, sparsely pilose above, scabrous and sometimes pilose below; panicles narrow, nodding, 10-20 cm. long, the branches flexuous, in distant fascicles, the lower 3-6 cm. long, seldom longer, bearing one or sometimes two spikelets; spikelets narrow, 2-3 cm. long; glumes lanceolate-acuminate, the first 1-nerved, 6-8 mm. long, the second 3-nerved 8-10 mm. long; lemmas narrow, lanceolate, 10-12 mm. long, sparsely villous on the margins and sometimes all over the basal portion, the upper portion glabrous or nearly so; awns more than 5 mm., usually about 7 mm. long.

Rocky woods and hillsides, and moist, shady ravines.

7. B. ciliatus L. ——→ Plants perennial; culms usually single, slender, erect, 60-120 cm. tall, glabrous or scabrous especially below the panicles; nodes appressed retrorsely pilose; sheaths glabrous to rather densely retrorsely pilose, the lower ones becoming reddish brown; blades flat, lax, pilose above, scabrous beneath, 10-30 cm. long, 5-12 mm. wide; panicles nodding, 10-20 cm. long, the branches flexuous, scabrous, naked below, the lower ones as much as 12 cm. long; spikelets on flexuous pedicels, 15-30 mm. long; first glume acuminate, scabrous, 1-nerved, 7 to 8 mm. long, the second obtuse, a little longer than the first, 3-nerved; lemmas about 12 mm. long, 5-nerved, densely villous on the margins and pilose on the midnerve below, otherwise glabrous or nearly so; awns less than 5 mm. long.

Meadows, rocky woods, and moist places. Upper Priest R., 3000 ft.; Coeur d'Alene; Clarkia 2700 ft.; Meadow Ridge, Pierce to Oxford.

8. B. tectorum L. ⟶ Downy Bromegrass. ⟶ Plants annual; culms tufted, slender, erect, 20-50 cm. tall; sheaths pubescent; blades lax, pubescent, 5-15 cm. long, 2-5 mm. wide; panicles rather dense, nodding, 5-15 cm. long, the branches in distinct whorls; spikelets drooping on slender flexuous pedicels; glumes narrow, acute or acuminate, with hyaline margins, the first 1-nerved, about 5 mm. long, the second 3-nerved, about 10 mm. long; lemmas pilose, 10-12 mm. long, awned from just below the teeth of the acuminate hyaline apex, the awn straight, 10-15 mm. long.

Waste places; introduced from Europe. A troublesome weed, often causing injury to stock because of the sharp calluses of the florets. Upper Priest R., 3000 ft.; Coeur d'Alene; Bonners Ferry.

not ⟶ var. glabratus Spenner. Differs from the species in having spikelets ⟶ glabrous or nearly so. (var. nudus Klett. & Richt.). ⟶ Waste places; ⟶ Thatuna Hills.

9. B. rigidus Roth. ⟶ Ripgut-grass. ⟶ Plants annual; culms erect, mostly 30-50 cm. tall; sheaths pubescent or the upper glabrate; blades soft and lax, pilose on both surfaces, 3-10 cm. long, 2-5 mm. wide; ligule 3-5 mm. long; panicles nodding, mostly 10-15 cm. long, the branches stiffly ascending or spreading, sometimes curved, usually bearing at the end a single spikelet; glumes long-acuminate, the margins hyaline, the first 1-3 nerved, 12-15 mm. long, the second 3-5 nerved, 20-30 mm. long; lemmas long-acuminate, very scabrous, the lower about 25 mm. long, the apex divided into two slender hyaline teeth, the awn 3-4 cm. long, very scabrous; base of the floret developed into a strong sharp callus.

A weed in waste places; introduced from Europe. This species is injurious to stock on account of the sharp-pointed, scabrous florets which penetrate the mouth parts. ⟶

⟶ Coeur d'Alene, ~~Rust 402~~, Rust 402.

10. B. brizaeformis Fisch. and Mey. Quaking Bromegrass, Rattlesnake-grass. Plants annual; culms 30-60 cm. tall, the nodes pubescent; sheaths softly pilose-pubescent with spreading hairs; blades pilose-pubescent, about 10 cm. long, 4 mm. wide; panicles nodding, 10 cm. long, the branches slender, flexuous, bearing a single spikelet; spikelets many-flowered, 25 mm. long, 10 mm. wide; glumes obtuse, the first 3-5 nerved, 6 mm. long, the second 7-9 nerved, 8 mm. long; lemmas very broad inflated, boat-shaped at the obtuse apex, smooth, the margins inrolled at the base, awnless.

Fields and waste places; introduced from Europe. Coeur d'Alene; De Smet Mission, Leiberg 1006; Viola; Thatuna Hills.

11. B. ~~hordeaceus~~ mollis L. Soft Cheat. → Plants annual; culms erect, 20-50 cm. tall; sheaths densely retrorsely pilose; blades pubescent or pilose, 5-10 cm. long, 2-5 mm. wide; panicles dense, contracted, 5-10 cm. long; spikelets short-pediceled, several flowered, about 15 mm. long; glumes acute, pilose, the first rather narrow, 3-nerved, 5 mm. long, the second broad, 5-nerved, about 6 mm. long; lemmas obtuse, densely pilose, awned from just below the teeth of the bifid apex, the awn about as long as the lemma.

Fields and waste places; introduced from Europe. Coeur d'Alene; Thatuna Hills.

12. B. secalinus L. Chess, Cheat. Plants annual; culms erect or more or less decumbent at the base, 30-80 cm. tall; sheaths glabrous, overlapping at least below; blades usually pilose on both surfaces, about 10 cm. long, 4 mm. wide; panicles open, the branches in whorls, rather stiffly ascending; spikelets chartaceous, glabrous; first glume rather narrow, acute, 3-nerved, 4-5 mm. long, the second broad, obtuse, 5-7 nerved, about 6 mm. long; lemmas broad, the nerves inconspicuous, the margins inrolled below, awned from the back just below the usually bifid apex, the awns shorter than the lemmas. sometimes wanting.

Fields and waste places; introduced from Europe. Cultivated for hay in Washington and Oregon. Lake Coeur d'Alene; Coeur d'Alene; near Post Falls; Fox Cr., Kaniksu Nat. For.

13. B. commutatus Schrad. → Similar to B. secalinus; sheaths pubescent; panicles narrower, the branches shorter, less spreading; glumes and lemmas papery, glabrous or scabrous, the nerves rather prominent, the margins hyaline, not inrolled below or only slightly so, the rachilla not visible.

Fields and waste places; introduced from Europe. Benton Cr. watershed, 2700 ft.; Harrison.

2. Festuca L. Fescue.

Annuals or perennials with narrow or open panicles; spikelets few to several flowered, the rachilla disarticulating above the glumes and between the florets; glumes unequal, lanceolate or acuminate; lemmas acuminate, rounded on the back, membranaceous or somewhat indurate, awned from the tip or sometimes awnless.

0 Plants annual

2 Spikelets densely 5-13 flowered — 1. F. octoflora

2 Spikelets 3-5 flowered, the florets rather distant — 2. F. pacifica

0 Plants perennial

2 Blades relatively broad and flat

1 Lemmas awnless — 3. F. elatior

4 Lemmas awned, the awn 7-10 mm. long, flexuous — 4. F. subulata

2 Blades mostly very narrow, involute or folded

1 Culms ascending from a decumbent or creeping, red and 8 fibrous base; blades smooth — 5. F. rubra

4 Culms tufted, erect; blades smooth or scabrous

6 Lemmas mucronate or short awned

8 First glume 2-3 mm. long; blades smooth — 6. F. viridula

8 First glume 6-7 mm. long; blades scabrous — 7. F. scabrella

6 Lemmas long awned

8 Awns slender and flexuous, mostly 7-8 mm. long; 12 blades smooth and soft — 8. F. occidentalis

8 Awns straight, 2-5 mm. long; blades harsh, 12 distinctly scabrous — 9. F. idahoensis

1. F. octoflora Walt. ——→Culms slender, often filiform, 10-30 cm. tall; sheaths smooth; blades smooth and soft, filiform, as much as 5 cm. long; panicles long-exserted, rather dense, the branches very short and appressed, bearing 1-3 spikelets; spikelets densely 5-13 flowered; glumes lanceolate or acuminate, the first 1-nerved, 3 mm. long, the second a little wider, 3-nerved, 4 mm. long; lemmas lanceolate, smooth or somewhat scabrous, 4-5 mm. long, tapering into slender awns 3-5 mm. long.

Moist river bank and sandy places. Scarce in our region on the banks of the Clearwater R. Lewiston, Sandberg et al. 290.

2. F. pacifica Piper. Culms in small tufts, slender, erect or somewhat spreading at the base, 10-30 cm. tall; sheaths smooth; blades smooth, filiform or very narrow, 1-5 cm. long; panicles rather flexuous, 5-10 cm. long, the branches stiffly, often horizontally spreading; spikelets appressed on the short branches, 3-5 flowered, the florets not crowded; glumes smooth, lanceolate, very narrow, subulate-pointed, the first 1-nerved, 4-6 mm. long, the second 3-nerved, 6-7 mm. long; lemmas smooth or scabrous, lanceolate, tapering into a slender awn 8-10 mm. long; palea often exceeding the body of the lemma.

Dry rocky slopes and open places. Near Santianne Divide, 3200 ft.; valley of Clearwater R.; Lewiston, 1500-2000 ft., 3000 ft.

3. F. elatior L. Meadow Fescue. ——→Culms erect or decumbent at the base, 40-100 cm. tall; sheaths smooth; blades scabrous above, smooth or scabrous below, 10-20 cm. long, as much as 8 mm. but usually 4-5 mm. wide; panicles narrow, erect or somewhat nodding, 10-20 cm. long, the branches erect or narrowly ascending, sometimes flexuous; spikelets short-pediceled, usually appressed, 5-10 flowered, 10-20 mm. long; glumes smooth, the margins hyaline, the first 1-3 nerved, 3-4 mm. long; the second 3-5 nerved, 4-7 mm. long; lemmas smooth, acuminate, 6-8 mm. long, hyaline at the summit, awnless; palea equaling the lemma.

Introduced from Eurasia as a meadow grass; often escaped in waste places. Coeur d'Alene, Rust in 1913.

4. F. subulata Trin. ——→ Culms erect, sometimes weak and decumbent at the base, as much as 120 cm. tall; sheaths smooth or scaberulous; blades thin and lax, scabrous or nearly smooth, 10-25 cm. long, 4-10 mm. wide; panicles loose and drooping, 10-30 cm. long, the branches 5-10 cm. long, distant, flexuous, naked below, spreading or, especially the lower, reflexed; glumes lanceolate, narrow, subulate-pointed, the first 1-nerved, 2-3 mm. long, the second 1-3 nerved, 4-5 mm. long; lemmas scabrous, especially above, 6-7 mm. long, tapering into a slender, often flexuous, awn 7-10 mm. long.

Borders of swamps, moist woods, and open places; frequent.

5. F. rubra L. Red Fescue. ——→ Culms erect from a usually decumbent base, smooth, 30-80 cm. tall; sheaths smooth, often tinged with red or purple; blades smooth or seldom scaberulous, rather soft, flat or mostly folded, 5-10 cm. long, longer on the innovations, very narrow or seldom as much as 2 mm. wide; panicles narrow, 5-20 cm. long, the branches stiffly ascending or spreading; spikelets usually tinged with purple; first glume lanceolate, 1-nerved, 3-4 mm. long, second glume lanceolate or ovate-lanceolate, 3-nerved, 4-5 mm. long; lemmas smooth or scabrous toward the apex, bearing an awn 1-5 mm. long.

Moist meadows and hillsides.

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var. lanuginosa Mert. and Koch. Differs from the species in having villous lemmas. North Fk. Clearwater R., 2600 ft., Evans and Hewett 9401.

6. F. viridula Vasey. Mountain bunchgrass. Culms slender, erect from a tufted base, 40-70 cm. tall; sheaths smooth; blades crowded toward the base, filiform, smooth and lax, as much as 30 cm. long, especially those of the innovations; panicles narrow, 5-10 cm. long, the branches ascending or spreading, sometimes flexuous; glumes lanceolate to ovate-lanceolate, acute or obtuse, the first 1-nerved, 2-3 mm. long, the second 1-3 nerved, about 4 mm. long; lemmas smooth or scaberulous, the lower 7-8 mm. long, acuminate, mucronate or with a very short awn.

Open woods, meadows, and mountain slopes, usually at higher altitudes.

7. F. scabrella Torr. ⟶ Buffalo Bunchgrass. ⟶ Culms tufted, erect, relatively coarse, 30-100 cm. tall, scaberulous; sheaths scaberulous or nearly smooth, the lower broad and prominent, somewhat inflated; blades firm, scabrous, strongly nerved, usually folded, 10-30 cm. long, as much as 2 mm. wide, but usually narrower; panicles narrow, 5-15 cm. long, the branches ascending or appressed, spikelet-bearing at the ends; spikelets about 1 cm. long, 4-5 flowered; glumes lanceolate, glabrous, the first 1-nerved, 6-7 mm. long, the second 8-9 mm. long, 1-3 nerved; lemmas lanceolate, scaberulous, acute or mucronate, the lower 8-10 mm. long.

Dry forests and rocky ledges. Lake Pend Oreille, 2100 ft.; near Santianne Divide, 3200 ft.; n. Fk. Hangman Cr.

8. F. occidentalis Hook. ⟶ Culms slender, erect from a densely tufted base, 40-80 cm. tall; sheaths smooth; leaves crowded toward the base, the blades filiform, smooth, soft and lax, as much as 20 cm. long; panicles flexuous or drooping, 8-20 cm. long, the branches distant, rather lax, spreading or the lower even reflexed; spikelets loosely 3-6 flowered; glumes lanceolate, the first 1-nerved, 2.5 mm. long, the second 3-nerved, 4 mm. long; lemmas scabrous, the lower 5-6 mm. long, the awns very slender, 5-10 mm., usually 7-8 mm. long

Moist or dry woods, meadows, and rocky hillsides.

9. F. idahoensis Elmer. Blue Bunchgrass. ⟶ Culms densely tufted, erect, or ascending at base, 40-90 cm., usually about 60 cm. tall; leaves crowded toward the base, the blades filiform, usually distinctly scabrous but sometimes nearly smooth; elongate, especially those of the innovations; panicles narrow, 5-20 cm., usually about 10 cm. long, the branches rather stiffly ascending or spreading; spikelets on rather short stiff pedicels, densely 5-7 flowered; glumes lanceolate, acute or sometimes acuminate, the first 1-nerved, 4-5 mm. long, the second 3-nerved, 5-6 mm. long; lemmas acuminate, usually smooth below, scabrous toward apex, the lower 6-8 mm. long, the awn straight, 2-5 mm. long.

Open woods, meadows, and mountain slopes.

Festuca ovina L. This species can be expected in our region although no specimens have been seen. Perennial; culms densely tufted, erect, mostly 20-40 cm. tall; blades involute, usually scabrous; panicles narrow, 5-8 cm. long; lemmas 4-5 mm. long, short-awned. In open woods and rocky slopes,

3. Glyceria R. Br. ~~(Panicularia Heister)~~ → Manna-grass.

Aquatic or marsh grasses with flat blades and open or contracted panicles. Spikelets several flowered, the rachilla disarticulating above the glumes and between the florets; glumes short, obtuse or acute, sometimes scarious, 1-nerved; lemmas obtuse, 4-7 nerved, the nerves prominent, parallel.(Panicularia Heister).

o Spikelets linear; panicles narrow, the branches usually
4 appressed

2 Lemmas 5 mm. long, scabrous between the nerves — 1. G. fluitans

2 Lemmas 4 mm. long, glabrous between the somewhat
6 scabrous nerves — 2. G. borealis

o Spikelets ovate or oblong; panicles broad, the branches
4 spreading or drooping

2 Lemmas 5 nerved — 3. G. pauciflora

2 Lemmas 7 nerved

4 First glume 0.5-1 mm. long; sheaths scabrous

6 Lemmas 2 mm. long; blades not over 6 mm. wide — 4. G. ~~nervata~~ striata

6 Lemmas 2.5 mm. long, blades as much as 10 mm. wide — 5. G. elata

4 First glume 2 mm. long; sheaths smooth — 6. G. grandis

1. G. fluitans R. Br. →Water Mannagrass. →Culms usually succulent, erect from a decumbent base, rooting at the lower nodes, 60-120 cm. tall; sheaths keeled, smooth or occasionally scaberulous, the lower ones often inflated; ligules thin and papery, as much as 10 mm. long; blades rather firm, erect, scabrous or nearly smooth, 10-25 cm. long, 3-7 mm. wide, the apex usually boatshaped; panicles narrow, 20 to as much as 45 cm. long, the branches erect or ascending; spikelets 5-9 flowered, the florets not crowded; glumes lanceolate or ovate-lanceolate, 1-nerved, the first 2-3 mm. the second 4-5 mm. long; lemmas obtuse, about 5 mm. long, strongly 7-nerved, scabrous on and between the nerves.

Shallow water along lakes and creek bottoms. →

→ Lake Coeur d'Alene, ~~Hitchcock 2148~~; Santianne Creek Bottoms, ~~Leiberg 1059~~; St. Maries, ~~Rydberg and Gifford 8025~~

2. G. borealis (Nash) Batchelder. Northern Mannagrass. ——→ Culms erect from a decumbent base, rooting at the lower nodes, as much as 120 cm. tall; sheaths keeled, smooth or scaberulous; ligules long and papery; blades flat or folded, scabrous above, nearly smooth beneath, 10-20 cm. long, usually less than 5 mm. wide, the apex boat-shaped; panicles narrow, as much as 40 cm. long, the branches usually appressed; spikelets rather long-pediceled, appressed to the branches, 10-15 mm. long; glumes obtuse, scarious, obscurely 1-nerved, the first 1.5-2 mm., the second 2.5-3.5 mm. long; lemmas obtuse, about 4 mm. long, 7-nerved, slightly scabrous on the nerves, glabrous on the internerves, the apex scarious, smooth and shining.

Swamps and shallow water along lake shores.

3. G. pauciflora Presl. ——→ Culms stiffly erect from a decumbent base with creeping rhizomes, 30-120 cm. tall; sheaths smooth or scabrous; ligules obtuse, 4-5 mm. long; blades acuminate, rounded at the base, scabrous on both surfaces, 3-20 cm., usually about 10 cm., long, 3-15 mm. usually less than 10 mm. wide; panicles nodding, 10-20 cm. long, the branches spreading, slender and flexuous; glumes ovate, acute or obtuse, the first 1-1.5 mm. long, the second broader, 1.5-2 mm. long; lemmas obtuse, 5-nerved, scabrous on the nerves, often sparsely so on the internerves, 2-3 mm. long, the apex usually tinged with purple.

Swamps, wet meadows, and lake shores.

striata (Lam.) Hitchc.

4. G. ~~nervata (Willd.) Trin.~~ Fowl Mannagrass. Culms slender, usually firm, not succulent, erect from a decumbent base, 30-100 cm. tall; sheaths usually scabrous; blades flat or folded, rather firm, erect or ascending, 5-25 cm. long, 2-6 mm. wide, seldom wider, scabrous or nearly smooth; panicles 5-15 cm. long, the branches usually ascending, naked below, the upper part flexuous; spikelets crowded toward the ends of the branches, usually tinged with purple; glumes ovate, 1-nerved, the first .5-1 mm. long, the second a little longer; lemmas strongly 7-nerved, the lower 2 mm. long.

Swamps and wet places.

5. G. elata (Nash) Hitchc. ⟶Culms soft and succulent, especially below, single or few together, erect from a more or less decumbent base, as much as 150 cm. tall; sheaths retrorsely scabrous, occasionally nearly smooth; ligules broad, truncate, 3-4 mm. long; blades thin and lax, scaberulous on both surfaces, 10-40 cm. long, 5-10 mm. wide; panicles nodding or drooping, 10-25 cm. long, the branches slender, flexuous, spreading or often reflexed, the lower as much as 15 cm. long; glumes ovate, 1-nerved, the first about 1 mm. long, the second 1-2 mm. long; lemmas 2.5 mm. long.

Wet meadows, springs, and moist woods.

6. G. grandis S. Wats. Culms rather stout, succulent, as much as 150 cm. tall; sheaths smooth; ligules broad, truncate 1-2 mm. long; blades smooth, as much as 60 cm., usually 20-30 cm., long, 4-10 mm. wide; panicles pyramidal, 25-30 cm. long; glumes ovate, or ovate-lanceolate, acute, about equal, 2 mm. long, or the second a little longer, whitish, contrasting with the usually purple tinged lemmas; lemmas obtuse; the lower 2.5 mm. long.

Wet meadows, marshes, and along streams. ⟶

not ⟶ Coeur d'Alene, ~~Rust 103~~; Wallace, ~~Kellogg 10103~~. ⟶

4. Poa L. Bluegrass.

Annuals or perennials with narrow, flat or folded blades with boat-shaped tips. Spikelets 2 to several flowered, disarticulating above the glumes and between the florets; glumes keeled, the first usually 1, the second 3-nerved; lemmas more or less keeled, 5-nerved, awnless, glabrous, pubescent, or with a cobweb at the base, the tip often scarious and shining.

O Plants annual — 1. P. annua

O Plants perennial

2 Rhizomes present

4 Culms much compressed; panicles dense, the short
8 branches appressed or stiffly spreading — 2. P. compressa

4 Culms not compressed, or only slightly so; panicles
8 open, the branches flexuous, naked below

6 Lemmas glabrous or sparsely pubescent on the back
10 below; cobweb wanting — 3. P. nervosa

6 Lemmas densely pubescent on the keel and marginal
10 nerves; cobweb present — 4. P. pratensis

l.c. 2 Rhizomes wanting; culms tufted

4 Cobweb present, sometimes scant

6 Culms loose and decumbent at the base, the lower
10 sheaths compressed, keeled — 5. P. palustris

6 Culms densely tufted, erect, the lower sheaths
10 rounded on the back — 6. P. interior

4 Cobweb wanting

6 Lemmas densely pilose on the keel and marginal nerves — 7. P. alpina

6 Lemmas glabrous, scabrous or crisp-pubescent
10 on the back below, the nerves not densely pilose

8 Culms bulbous at the base; spikelets proliferous — 14. P. bulbosa

8 Culms not bulbous; spikelets normal

10 Lemmas crisp-pubescent on the back below

12 Culms decumbent at the base, loosely tufted;
16 panicle branches spreading — 8. P. gracillima

12 Culms erect, densely tufted; panicles
16 narrow, the branches appressed

14 Leaves in a basal cluster, the
12 blades mostly less than 1 mm. wide;
culms slender, mostly less than 30
cm. tall — 9. P. ~~Sandbergii~~ secunda

14 Leaves scattered, the blades as much as
18 3 mm. wide; culms stouter, more than
50 cm. tall — 10. P. Canbyi

10 Lemmas glabrous or scabrous

12 Culms stout, as much as 120 cm. tall;
16 panicles ample, as much as 30 cm. long — 11. P. ampla

12 Culms slender, less than 50 cm. tall;
16 panicles less than 10 cm. long

14 Panicles ovoid, dense; blades as much
18 as 2 mm. wide, smooth — 12. P. epilis

14 Panicles open, or if dense, not ovoid;
16 blades very narrow, scabrous — 13. P. Cusickii

1. P. annua L. Annual Bluegrass. → Culms tufted, erect or spreading, often weak and lax, 10-30 cm. tall; plants smooth throughout; blades mostly 2-5 cm. long, 2-3 mm. wide; ligules obtuse, 2-3 mm. long; panicles 2-5 cm. long, the branches stiffly ascending, spreading, or sometimes reflexed, naked below; first glume lanceolate, 1-nerved, 2 mm. long, the second ovate or ovate-lanceolate, often acute, 3-nerved, 2.5 mm. long; lemmas obtuse, the lower 3 mm. long, the intermediate nerves prominent, the keel and lateral nerves pubescent below; cobweb wanting. =1

Moist ground, woods, and waste places. →

not → Between Burke and Upper Glidden Lake, 4000-5900 ft. ~~Chase 5044~~; ~~Burke Chase 5064~~ →

2. P. compressa L. Canada Bluegrass. → Culms erect from a decumbent base with creeping rhizomes, 20-40 cm. tall; sheaths keeled, smooth or obscurely scabrous; blades firm, erect or ascending, smooth or scaberulous, 3-8 cm. long, 1-3 mm. wide; panicles narrow, rather dense, 3-8 cm. long, the short branches appressed or stiffly spreading; spikelets on short pedicels, crowded and usually appressed along the branches; glumes straight or usually arcuate, 3-nerved, the first lanceolate, 2 mm. long, the second ovate or ovate-lanceolate, 2.5 mm. long; lemmas tinged with bronze and purple at the summit, 2.5 mm. long, the intermediate nerves obscure, the keel and marginal nerves sparsely pubescent below, the cobweb scant.

Dry or wet hillsides and lake shores →

not → Lake Pend Oreille, ~~650 m., Leiberg 165~~ (2100 ft.); Lake Coeur d'Alene, ~~Sandberg 5~~; Chatuna Hills, ~~Epling and Houck 9109~~ →

3. P. nervosa (Hook.) Vasey. → Culms erect or decumbent at the base, with creeping rhizomes, 30-60 cm. tall; sheaths smooth or scaberulous; blades scaberulous or pubescent above, smooth beneath, flat or folded, 3-6 cm. long, longer on the innovations, 1-2 mm. wide; ligules truncate, 1-2 mm. long; panicles 5-10 cm., usually 10 cm. long, the branches slender, flexuous, naked below; glumes glabrous or scabrous on the keels, the first lanceolate, 2-2.5 mm. long, the second lanceolate or ovate-lanceolate, 3 mm. long; lemmas 3.5 mm. long, more or less pubescent on the nerves below; cobweb wanting.

Woods, moist shady banks, and ravines. Shedroof Mt., 5000 ft.; Weissners Peak, 3400 ft.

4. P. pratensis L. Kentucky Bluegrass. → Culms erect, 20-80 cm. tall, with slender creeping rhizomes; sheaths usually smooth; ligules truncate, 1-2 mm. long; blades rather firm, flat or folded, scabrous above, smooth beneath, 3-10 cm. long, 1-3 mm. wide; panicles pyramidal, 4-12 cm. long, the branches in distant fascicles, 3-5 in a fascicle, naked below, ascending or spreading; spikelets crowded toward the ends of the branches, about 5 mm. long; first glume acuminate, the second widest at the middle, usually abruptly narrowed to an acute or acuminate apex; lemmas 3-4 mm. long, villous on the keel and marginal nerves, the cobweb dense.

Woods, meadows, and waste places.

5. P. palustris L. Fowl Meadowgrass. → Culms erect from a loose decumbent base, 40-120 cm. tall; sheaths smooth or scaberulous, the lower ones keeled and tinged with red or purple; ligules prominent, truncate, 2-3 mm. long, seldom longer; blades flat or loosely folded, erect or ascending, sometimes lax, 5-20 cm. long, 2-5 mm. wide; panicles pyramidal, 10-40 cm. long, the branches in rather distant fascicles, spreading, flexuous, naked below, as much as 10 cm. long; spikelets pale or tinged with bronze and purple, 2-3 flowered; glumes lanceolate-acuminate, nearly equal, 2.5-3 mm. long; lemmas lanceolate, blunt, obscurely nerved, 2.5-3 mm. long, villous on the keel and marginal nerves, the cobweb sometimes scant.

Wet meadows, common.

6. P. interior Rydb. ——→ Culms densely tufted, usually stiffly erect, 30-60 cm. tall; sheaths smooth, not keeled; blades smooth or scaberulous, rather lax, 5-10 cm. long, 1-2 mm. wide; panicles narrow, 5-20 cm., usually about 10 cm., long, the branches ascending or spreading, scarcely flexuous; glumes acuminate, the first 2.5 mm., the second 3 mm., long; lemmas lanceolate, 3 mm. long, villous on the keel and marginal nerves, cobweb sparse.

Moist lake shores. Lake Coeur d'Alene, Sandberg et al 545.

7. P. alpina L. ——→ Culms densely tufted, 10-20 cm. tall; sheaths smooth; ligules 1-3 mm. long; leaves mostly basal, the blades 1-4 cm. long, 1-4 mm. wide; panicles dense, long-exserted, 2-4 cm. long, nearly as broad as long; spikelets 4-5 mm. long, 2-3 mm. wide, 5-6 flowered, the florets crowded; glumes ovate, arcuate, the first 1-nerved, 2.5 mm. long, the second 3-nerved, 3 mm. long; lemmas broad, about 1 mm. from keel to margin, 3 mm. long, densely long-villous on the keel and marginal nerves, more or less villous on the internerves below; cobweb wanting. =1

Grassy slopes at high elevations. Stevens Peak, 5700 ft., Leiberg 1459.

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8. P. gracillima Vasey. Culms erect from a loosely tufted, decumbent base, 10-50 cm., usually 20-30 cm. tall; sheaths smooth; ligules 1-4 mm. long; blades firm or rather lax, very narrow or as much as 2 mm. wide, those of the culm very few and often much reduced; panicles long-exserted, triangular, 5-10 cm. long, the branches in distant fascicles, 2-5 in a fascicle, spreading or even reflexed, naked below; glumes oblong-lanceolate, acute or usually obtuse, the first 3-4 mm., the second 4-5 mm., long; lemmas lanceolate, 4-5 mm. long, crisp-pubescent on the lower portion of the back, the upper portion glabrous or scabrous.

Meadows, grassy hillsides, and rocky slopes and ledges.

9. P. ~~Sandbergii Vasey.~~ secunda Presl. → Culms erect from a densely tufted base, 30-50 cm., mostly about 30 cm., tall; leaves in a basal cluster, the blades smooth or scaberulous, soft, mostly less than 1 mm. wide; ligules 2-3 mm. long; panicles narrow, 5-15 cm., mostly less than 10 cm., long, the branches appressed or ascending; glumes lanceolate-acuminate, the first 3-4 mm. long, the second 4-5 mm. long; lemmas lanceolate, 4-5 mm. long, scabrous above, densely crisp-pubescent on the lower part of the back.

Meadows, plains, and rocky slopes.

10. P. Canbyi (Scribn.) Piper. → Culms densely tufted, erect or ascending at the base, rather stout, 50-90 cm., usually about 60 cm., tall; leaves not crowded at the base, the blades firm, flat, scabrous or nearly smooth on both surfaces, 1-3 mm. wide; ligules 3-5 cm. long; panicles erect, dense, 10-15 cm. long; glumes lanceolate or acuminate, the first 3-4 mm., the second 4-5 mm., long; lemmas lanceolate, 4-5 mm. long, the apex sometimes acute, crisp-pubescent on the lower part of the back.

Meadows and open woods. →

no ff → Upper St. ~~Mary's~~ (Maries) R., ~~Leiberg 1107~~; Viola, ~~Sandberg, Heller and MacDougal 505~~ →

11. P. ampla Merr. → Culms erect from a tufted base, as much as 120 cm. tall; sheaths smooth or somewhat scabrous; ligules short, less than 1 mm. long; blades firm, flat or folded, scabrous above, smooth or scabrous below, 10-30 cm. long, or longer on the innovations, 1-3 mm. wide; panicles narrow, rather dense, 20-30 cm. long, the branches ascending or appressed; spikelets pale or glaucous, 5-10 mm. long; glumes scabrous, lanceolate-acuminate, the first 1-3 nerved, 4-5 mm. long, the second 3-5 nerved, 5-6 mm. long; lemmas lanceolate, acute or obtuse, 5-6 mm. long, glabrous, or usually scabrous.

Meadows, river banks, and roadsides.

12. P. epilis Scribn. → Culms erect from a densely tufted base, 20-40 cm. tall; sheaths smooth; ligules about 2 mm. long; blades smooth, soft, flat or loosely folded, very narrow or as much as 2 mm. wide; panicles long-exserted, ovoid or rather narrow, dense, 2-5 cm. long; glumes ovate-lanceolate, the first 3 mm., the second 4 mm. long; lemmas lanceolate, 4-5 mm. long, scabrous.

Grassy mountain slopes. →

no ff → Divide between St. Joe and Clearwater R., (6200 ft.) ~~1900 m.~~ ~~Leiberg 1295~~; Nez Perce National Forest, 6000 ft. ~~Cross 11~~ →

13. P. Cusickii Vasey. ——→Culms erect or ascending from a densely tufted base, 20-50 cm. tall; sheaths smooth or scabrous; leaves mostly basal, the blades filiform or very narrow, scabrous, those of the innovations as much as 20 cm. long; panicles long-exserted, dense, the branches stiff and appressed to slender and flexuous, 3-10 cm. long; glumes lanceolate or acuminate, the first 3-4 mm., the second 4-5 mm., long; lemmas lanceolate, or acuminate, often subaristate, smooth or scabrous, about 5 mm. long.

Rocky slopes. Clearwater Cr. near Lewiston; Hatwai Cr. Nez Perces Co., Sandberg 138. This species is very variable but cannot be satisfactorily separated into distinct species. The form found in our region has lax open panicles, and the lemmas are smooth or nearly so, not subaristate. This has been named Poa filifolia Vasey. (Type, Sandberg 138).

14. P. bulbosa L. ——→Culms densely tufted, erect from a bulbous base, 20-60 cm. tall; ligules 2-4 mm. long; basal blades smooth and lax, filiform, those of the culm rather firm, smooth or scabrous, 2-5 mm. long, 1-2 mm. wide; panicles narrow but open, contracting when mature, 5-10 cm. long, appearing bushy from the leaf blades of the bulblets formed on the spikelets.

Fields and waste places, introduced from Europe. In Oregon where it has become established, it provides excellent pasture and is also cut for hay. ——→

not ——→Moscow, Gail in 1927.

5. Eragrostis Host.

Annuals with open panicles of rather large spikelets. Spikelets several to many flowered, the rachilla continuous; ~~the~~ lemmas deciduous, the paleas persistent; glumes acute, nearly equal, the first 1-nerved, the second 1-3-nerved; lemmas acute, or somewhat obtuse, 3-nerved, the nerves prominent.

1. E. cilianensis (All.) Link. Stinkgrass. Culms erect or usually geniculate-spreading, as much as 70 cm. tall; sheaths smooth with a tuft of hairs at the mouth, glandular; blades flat, smooth, mostly 10-15 cm. long; panicles open, 5-10 cm. long, the branches and branchlets stiffly spreading, more or less glandular; spikelets usually many-flowered on short stout pedicels, plumbeous, as much as 15 mm. long; glumes 1.5-2 mm. long; lemmas broad, obtusish, 2 mm. long, the keels with prominent glandular spots.

A weed in waste places; introduced from Europe. ——→

no H ——→Moscow, Henderson 4630.

6. Dactylis L. Orchard Grass.

Stout perennials with flat blades and spikelets crowded toward the ends of the panicle branches. Spikelets few-flowered, compressed, disarticulating above the glumes and between the florets, the florets crowded, successively smaller, making the summits about equal; glumes unequal, keeled, acute or acuminate, scabrous or hispid on the keel, the first 1-nerved, the second 3-nerved; lemmas acute or acuminate, awn-pointed, scabrous, 5-nerved, stiffly ciliate on the keels.

1. D. glomerata L. ~~Orchard Grass.~~ ——→ Culms stout, tufted, as much as 140 cm. tall; sheaths scabrous; blades flat, scabrous or nearly smooth, as much as 35 cm. long and 7 mm. wide; panicles open, contracted after flowering, the few branches stout, stiffly spreading, naked below; spikelets nearly sessile, glomerate at the ends of the branches.

Fields and waste places; introduced from Europe. Coeur d'Alene; St. Josephs R., 2120 ft.; St. Maries.

7. Cynosurus L. Dogtail.

Annuals or perennials with flat slender blades and dense spikelike or capitate panicles. Spikelets in pairs, one fertile, the other sterile; fertile spikelet sessile, 2-3 flowered, the rachilla jointed above the glumes, the lemmas rounded on the back, awn-tipped; sterile spikelet short pediceled, with 2 glumes and several acuminate lemmas on a continuous rachilla.

1. C. cristatus L. ——→Crested dogtail. Perennial; culms slender, erect or decumbent at the base, as much as 75 cm. tall; blades elongate, glabrous; panicle narrow, spikelike, 3-8 cm. long; fertile lemmas 3-4 mm. long, scabrous toward the tip, the awn about 1 mm. long.

Fields and waste places; introduced from Europe.——→

no H ——→Sandpoint, Christ 2051.

8. Phragmites Trin.

Coarse perennial grasses with broad flat blades and usually large plumelike panicles. Spikelets several-flowered, the rachilla jointed above the glumes and between the florets, densely silky-villous; glumes lanceolate, acute, the first about half as long as the second; lemmas long acuminate, glabrous; palea much shorter than the lemma.

1. P. communis Trin. ⟶ Common reed. Culms erect, as much as 4 m. tall, with stout creeping rhizomes; sheaths overlapping, glabrous, often with a small tuft of hairs at the throat; ligule ciliate, about 1 mm. long; blades flat, acuminate, 1-5 cm. wide, glabrous on both surfaces, the margins appressed-hispid; panicles 15-40 cm. long, densely flowered, the branches ascending.

Bogs and wet ground. ⟶

not ⟶ Copeland District, Christ 835.

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9. Melica L. Onion Grass.

Tall perennials with closed sheaths, and flat blades, the bases of the culms swollen into distinct corms. Spikelets several flowered, disarticulating above the glumes and between the florets, bearing one to three gradually smaller empty lemmas above the fertile florets; glumes unequal, membranaceous, acute or obtuse; lemmas firm, rounded on the back, prominently several-nerved, acuminate or obtuse, awnless.

0 Culms bulbose at the base

2 Bulbs narrowly ovoid; lemmas acuminate — 1. M. subulata

2 Bulbs globose; lemmas obtuse — 2. M. spectabilis

0 Culms not bulbose at the base — 3. M. Smithii

1. M. subulata (Griseb.) Scribn. —→Alaska Onion Grass. ——→Culms erect or ascending, smooth or usually scabrous, 40-110 cm. usually about 90 cm. tall; corms ovoid; sheaths overlapping at least below, distinctly retrorsely scabrous, and often retrorsely pilose as well; blades flat, scabrous on both surfaces, 5-25 cm. long, 2-7 mm. wide; panicles narrow, 6-20 cm. long, the branches distant, appressed, few-flowered, floriferous from near the base; spikelets linear, 15-20 mm. long; glumes membranaceous, oblong-lanceolate, the first 3-5-nerved, 5 mm. long, the second 5-7-nerved, 8 mm. long, scabrous on the nerves; lemmas long-acuminate, 10-12 mm. long, 7-nerved, hispid on the nerves, especially the lateral ones, sometimes sparsely so.

Open woods, hillsides, and canyons.

2. M. spectabilis Scribn. ——→Culms erect, 40-100 cm. tall; corms globose; sheaths overlapping, scabrous; blades flat or loosely folded, attenuate into a rather fine point, scabrous on both surfaces, 10-20 cm. long, 2-4 mm. wide; panicles narrow but open, 10-20 cm. long, the branches simple, distant, ascending or spreading, slender, somewhat flexuous; spikelets on slender, usually flexuous pedicels, 8-15 mm. long, prominently tinged with purple; glumes ovate or oblong, usually rather abruptly narrowed near the summit; the first 1-3-nerved, 4-6 mm. long, the second 5-7-nerved, 6-8 mm. long; lemmas broad, narrowed above the middle into an obtuse or subacute, hyaline apex, scabrous, 7-9-nerved, the nerves prominent.

Moist meadows and mountain slopes. ——→

not ——→Priest Lake, 4900 ft. ~~1500 m., Leiberg 2740~~, Santianne Creek bottoms, 3000 ft. ~~950 m.~~ ~~Leiberg 1041~~; Ridge north of Fish Lake, ~~Epling and Houck 9850~~.

3. M. Smithii (Porter) Vasey. Culms slender, erect, mostly 1-1.5 m. tall; sheaths shorter than the internodes, scabrous; ligule thin, hyaline, 4-5 mm long; blades thin, flat, lax, scabrous at least on the margins, 6-12 mm. wide; panicles 15-25 cm. long, the branches solitary, distant, spreading or reflexed, spikelet bearing only on the upper half; spikelets purplish, 3-6-flowered; lower lemma 10-14 mm. long, acuminate, minutely toothed, scabrous, the awn 3-5 mm long.

Moist woodlands. ——→

ff ——→Upper Lightning Creek, Christ 895.

10. Agropyron Gaertn. Wheatgrass.

Perennials, sometimes with rhizomes, with usually erect culms and spikes. Spikelets several flowered, sessile and solitary placed flatwise at each node of the continuous rachis, the rachilla disarticulating above the glumes and between the florets; glumes equal, firm, acute or awned, usually shorter than the first lemma; lemmas firm, rounded on the back, acute.

0 Rhizomes present, well developed

2 Glumes acute, strongly nerved; blades relatively
6 thin and rather lax — 1. A. repens

2 Glumes acuminate, faintly nerved; blades very firm,
6 strongly nerved — 2. A. Smithii

0 Rhizomes wanting (or short ones occasionally produced
4 in A. spicatum)

2 Lemmas awnless or short-awned

4 Glumes obtuse or abruptly pointed; blades narrow,
8 mostly involute — 6. A. inerme

4 Glumes acute or acuminate; blades comparatively
8 broad, flat — 3. A. ~~tenerum~~ trachycaulum

2 Lemmas long-awned

4 Awns straight — 4. A. ~~caninum~~ subsecundum

4 Awns divergent — 5. A. spicatum

1. A. repens (L.) Beauv. Quackgrass. → Culms erect or decumbent at the base, 50-100 cm. tall; rhizomes long and yellowish; blades flat and rather lax, scabrous, sometimes sparsely pilose above, 10-20 cm. long, 3-10 mm. wide; spikes erect, 8-15 cm. long; spikelets expanded at flowering time, contracted at maturity, somewhat stiffly spreading; glumes acuminate, mucronate or short-awned, strongly 3-5-nerved, 8-10 mm. long; lemmas glabrous, the lower ones about 10 mm. long, pointed, sometimes short-aristate. =1

Fields and waste places; introduced from Europe. →

oft → Priest Lake, 2700 ft. ~~Spring 779~~; Coeur d'Alene; ~~Rust 615~~ Priest River.

2. A. Smithii Rydb. → Plants usually glaucous; culms erect, 40-90 cm. tall, stiff from pale rhizomes; blades stiff, flat or inrolled, strongly nerved and scabrous above, smooth or nearly so beneath, 5-15 cm. long, 3-5 mm. wide; spikes stiffer than in A. repens; spikelets 15-20 mm. long, several flowered; glumes indurate, smooth, very faintly nerved, subulate-pointed, about half the length of the spikelets; lemmas hard, acuminate, mucronate, smooth or somewhat scabrous.

Alkaline flats and river banks. →

oft → Pierson, ~~640 ft. Leiberg 1615~~ 2000 ft.; Coeur d'Alene, ~~Rust 75~~ →

trachycaulum (Link) Malte. ~~tenerum Vasey~~ Hitchc.

3. A ~~tenerum Vasey~~. ——→ Culms cespitose, erect, 50-100 cm. tall; blades relatively thin and lax, acute or acuminate, 5-20 cm. long, 2-5 mm. wide, scabrous on both surfaces, sometimes also pilose above; spikes usually erect, 10-20 cm. long; spikelets reaching about the middle of the spikelet above on the opposite side of the rachis; glumes acute or acuminate, 3-5-nerved, 6-10 mm. long, scabrous; lemmas acuminate, mucronate or sometimes short-aristate, scabrous, especially toward the tip. (A. tenerum Vasey; A. pauciflorum (Schwein.) Hitchc.)

Dry rocky woods and hillsides.

4. A. subsecundum (Link.) Hitchc. Similar to A. ~~tenerum~~ trachycaulum, but differing in the long-awned lemmas.

Benton Cr. watershed, Kaniksu Nat. For., 2300 ft., Larsen 169.

5. A. spicatum (Pursh.) Scribn. and Smith. ——→ Culms cespitose or in loose colonies, erect, 50-120 cm. tall, smooth; innovations extravaginal, often forming short rhizomes; sheaths smooth; blades firm, flat or loosely involute, 10-20 cm. long, often attenuate to a fine point, pubescent above, smooth or scabrous beneath; spikes erect, 10-20 cm. long; spikelets rather distant, not reaching the one above on the same side; glumes lanceolate, 3-5-nerved, acute, awnless, 6-12 mm., usually about 10 mm., long; lemmas smooth, the lower 10-12 mm. long, the awn 10-20 mm. long, strongly divergent at maturity.

Dry woods and rocky hillsides at middle altitudes.

6. A. inerme (Scribn. and Smith) Rydb. ——→ Similar to Agropyron spicatum, but differing from that species in having narrow involute blades, awnless or rarely short-awned lemmas, and more obtuse glumes.

Dry pine woods and hillsides. Upper Priest Lake, 2700 ft.; Valley of Tessemini Lake; Post Falls; Moscow.

11. Elymus L. Wild Rye..

Tall perennials with dense terminal spikes. Spikelets sessile, two (sometimes more in E. condensatus) at each node of the continuous rachis, the rachilla disarticulating above the glumes and between the florets; glumes equal, lanceolate or subulate, acute or aristate; lemmas rounded on the back, awnless or long-awned.

O Glumes subulate; lemmas awnless; culms with short
4 knotty rhizomes — 1. E. condensatus

O Glumes comparatively broad; lemmas awned (except in
4 E. virginicus var. submuticus), the awns 1-3 cm.
long; rhizomes wanting

2 Glumes thin, not indurate at the base — 2. E. glaucus

2 Glumes firm, indurate and more or less bowed
6 out at the base

4 Awns erect or wanting — 3. E. virginicus

4 Awns spreading — 4. E. canadensis

1. E. condensatus Presl. Culms stout in large clumps with short knotty rhizomes, erect, about 150 cm. tall; sheaths smooth; blades flat, firm, ascending, scabrous above, nearly smooth beneath, as much as 40 cm. long and 12 mm. wide; spikes erect, dense, 10-20 cm. long; glumes subulate or very narrow, awn-pointed; lemmas sparsely pilose, awnless or short-aristate.

Dry slopes and sandy river banks. .Near Slackwater, St. Josephs R., Leiberg 1302.

2. E. glaucus Buckl. ——> Culms slender, as much as 120 cm. tall, smooth or scabrous; sheaths smooth to hirsute; leaves flat, rather lax, long- =/ acuminate, pointed, scabrous, 10-25 cm. long, 2-10 mm. wide, seldom wider; inflorescence dense, 5-15 cm. long; glumes lanceolate, acuminate or awn-pointed,

about as long as the spikelet, usually 3-nerved, scabrous on the nerves; lemmas 8-12 mm. long, the awns 10-20 mm. long, erect or somewhat spreading.

Open woods and hillsides, common.

3. E. virginicus var. submuticus Hook. ——→Culms slender, erect, 55-100 cm. tall; sheaths shorter than the internodes, glabrous or scabrous; blades flat, lax, 5-15 mm. wide, scabrous; spike 5-10 cm. long, exserted, erect; glumes very thick and indurate at the bowed out base, acute, scabrous or nearly glebrous; lemmas acute, awnless or nearly so, sparsely scabrous.

Dense woods and thickets. ——————————————————→

——→Copeland, Christ 637.

4. E. canadensis L. ——→Culms coarse, erect, usually more than 1 m. tall; sheaths mostly overlapping, glabrous; blades flat, 1-2 cm. wide, rather firm, the margins scabrous, otherwise glabrous or nearly so; spike 10-25 cm. long, drooping, more or less interrupted at the base; glumes indurate at the base but not bowed out, attenuate; lemmas hirsute, the long awns divergent, somewhat tortuous.

Open ground and waste places. ——————————————————→

——→Sandpoint, Christ 590.

18. Hordeum L. Wild Barley.

Annuals or perennials with dense cylindrical spikes. Spikelets 1-flowered, 3 together at each node of the articulated rachis, the group falling entire, the middle one sessile, the lateral pediceled; rachilla of the central spikelet prolonged behind the palea, bearing a rudimentary floret; lateral spikelets reduced; glumes subulate, standing in front of the spikelet; lemmas rounded on the back, obscurely nerved, tapering into the awns.

o Plants annual, 1. H. Gussoneanum

o Plants perennial.

2 Awns 4-6 cm. long, spreading 2. H. jubatum

2 Awns less than 1 cm. long, straight 3. H. nodosum

1. H. Gussoneanum Parl. → Culms tufted, ascending or spreading, more or less geniculate at the nodes, 10-30 cm. tall; sheaths pubescent or glabrous; blades narrow, lax, pubescent, 1-5 cm. long, seldom longer; spikes ovoid, mostly 2-3.5 cm. long; spikelets crowded; glumes subulate, nerveless, thickened toward the base, scabrous, about 1 cm. long, including the awm; lemmas of central spikelets 5 mm. long, the awns stiffly ascending, somewhat exceeding those of the glumes.

Waste places; introduced from Europe. →

not → Coeur d'Alene, Rust 459.

2. H. jubatum L. Squirreltail Grass. → Culms slender, tufted, erect, or spreading at the base, 40 cm. tall, sometimes taller; sheaths glabrous, scabrous or pubescent; leaves flat, firm, stiffly ascending, 5-10 cm. long, 2-4 mm. wide, scabrous; spikes nodding and flexuous, readily disarticulating, 10 cm. long; lateral spikelets reduced to awns; glumes of the central spikelet awnlike, very scabrous, 4-6 cm. long; lemmas 5-8 mm. long, the awns slender, as long as those of the glumes, ascending or spreading.

Fields and waste places. →

not → Coeur d'Alene, ~~Rust 503~~; Viola, ~~Sandberg 183~~

3. H. nodosum L. Culms tufted, erect, 30-60 cm. tall; lower sheaths pubescent, the upper ones glabrous or scabrous; leaves rather thin, scabrous, ascending, 4-10 cm. long, 2-5 mm. wide, sometimes narrower and elongate, especially on the innovations; spikes erect, 3-5 cm. long; florets of the lateral spikelets stipitate, much reduced, acuminate or short-awned; glumes setiform, scabrous, about 1 cm. long; lemmas of the central spikelets acuminate, scabrous, 6 mm. long, the awns a little longer than the glumes.

Moist meadows and hillsides. →

not → Lake Pend Oreille, ~~Sandberg, Heller and MacDougal 065~~; Wallace, 2728-4000 ft., ~~Shase 503~~; Viola, ~~Sandberg 407~~

13. Lolium L. Ryegrass.

Perennials with flat blades and flattened terminal spikes. Spikelets several flowered, the rachilla disarticulating above the glumes and between the florets, sessile, solitary, placed edgewise to the rachis; first glume wanting, the second turned toward the outside, about as long as the second floret, strongly 3-5-nerved; lemmas acute or obtuse 5-7-nerved, awnless.

o Glumes much shorter than the spikelet — 1. L. perenne

o Glumes exceeding the florets — 2. L. temulentum

1. L. perenne L. Perennial Ryegrass. Culms erect or decumbent at the base, 20-60 cm. tall; blades flat, lax, smooth, glossy, especially when young, 5-10 cm. long, 2-5 mm. wide; spikes curved or nodding, about 10 cm. long; spikelets divergent, about 1 cm. long; glumes blunt, faintly nerved, a little more than half the length of the spikelet; lemmas lanceolate, awnless, 5-6 mm. long.

A weed in waste places; introduced from Europe. Coeur d'Alene, Rust 315.

L. multiflorum Lam. Italian Ryegrass. Differs from L. perenne in being more robust in habit and in having awned lemmas, ~~and~~ may also occur in our region.

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2. L. temulentum L. Darnel. Annual; culms stiffly erect, 60-90 cm. tall; blades firm, flat, 3-6 mm. wide, glabrous; spikes 15-20 cm. long, the axis thick, angular, scabrous; glumes 15-20 mm. long, abruptly acute, glabrous; lower lemma about 8 mm. long, obtuse, entire or minutely lobed, awnless or short awned.

du

Fields and waste places, infrequent. Introced from Europe. Bonners Ferry, Christ 2061.

14. Koeleria Pers. June Grass; False Poa.

Perennials with contracted panicles; spikelets laterally compressed, 2-4-flowered, disarticulating above the glumes and between the florets, the rachilla prolonged beyond the uppermost floret and sometimes bearing a reduced floret; glumes about equal, the first narrow, 1-nerved, the second broader, 3-5-nerved; lemmas scarious, shining, awnless or short-awned, the lower a little longer than the glumes. =/

1. K. cristata (L.) Pers. Culms tufted, erect, 20-60 cm. tall, densely pubescent below the panicles; leaves crowded toward the base, the blades scaberulous or nearly smooth, seldom more than 1 mm. wide; inflorescence dense, shining, 5-10 cm. long, more or less interrupted at the base; spikelets 4-5 mm. long, scabrous, pale or tinged with purple.

Dry rocky wooded hillsides, sandy soil, and prairies. Coeur d'Alene; Latah Co.; Little Potlatch R.; Lewiston.

15. Trisetum Pers.

Perennials with open or contracted panicles. Spikelets 2 or 3 flowered, disarticulating above the glumes and between the florets, the rachilla prolonged behind the uppermost floret, hairy; glumes from nearly equal to very unequal, the second about as long as the first floret; lemmas cleft at the summit, the teeth sometimes setaceous-pointed, awned from the back above the middle, the awn short and included, or exserted, spreading, straight or geniculate, often loosely twisted below.

o Awns wanting or short and included — 1. T. Wolfii

o Awns long-exserted

2 Inflorescence dense and spikelike; spikelets 6 3-flowered — 2. T. spicatum congdoni

2 Inflorescence open, if somewhat dense, the 6 spikelets 2-flowered

4 Panicle branches spikelet-bearing from near the 8 base; foliage more or less pilose; blades firm — 3. T. canescens

4 Panicle branches naked below; foliage glabrous 8 or scabrous; blades thin and lax — 4. T. cernuum

1. T. Wolfii Vasey. ——→Culms erect, as much as 70 cm. tall; sheaths smooth or scaberulous, more or less retrorsely pilose; ligules broad, erose, 2-4 mm. long; blades flat, rather firm, erect or ascending, 5-10 cm. long, those of the innovations longer, 2-5 mm. wide, scaberulous and more or less pilose on both surfaces; panicles dense, 10-20 cm. long, the branches appressed or somewhat spreading; spikelets 2-3 flowered, pale, shining, tinged with purple; glumes lanceolate, nearly equal, 4-7 mm. long, the first 1; the second 3-nerved, scabrous on the keels; lemmas scabrous, the lower 4-5 mm. long, awnless or with a very short awn scarcely reaching the tip.

Mountain meadows. ——→

no ♯ ——→Santianne Cr. bottoms, ~~970 m.~~ (3100 ft.) ~~Leiberg 104~~, Head of Little Potlatch R. ~~Sandberg, Heller and MacDougal 435~~

2. T. spicatum ~~congdoni (Scribn. & Merr.) Hitchc.~~ (L.) Richt. Culms tufted, erect, 20-60 cm. tall, glabrous; sheaths smooth or scaberulous; blades flat, lax, scabrous, 1-3 mm. wide; inflorescence dense, spikelike, interrupted below, 5-10 cm. long; spikelets 3-5 flowered, 5-6 mm. long, pale or tinged with purple; first glume 1-nerved, the second 3-nerved, a little longer and broader than the first; lemmas 4-5 mm. long, scabrous, awned from the back one-third below the apex, the awn divergent, usually loosely twisted below, about 5 mm. long.

Mountain meadows and rocky slopes. The plant found in our region is the nearly glabrous form which has been called T. spicatum var. congdoni (Scribn. & Cap. Merr.) Hitchc.

3. T. canescens Buckl. ——→ Culms solitary or few together, erect or ascending at the base, as much as 80 cm. tall; sheaths retrorsely pilose, sometimes only scabrous; ligules 2-3 mm. long; blades flat, scabrous or pilose on both surfaces, 5-15 cm. long, 2-7 mm. wide; inflorescence open, but rather dense, 10-20 cm. long, the branches spikelet-bearing from near the base; spikelets 2-flowered; first glume narrow, 1-nerved, lanceolate, acuminate, 4-5 mm. long, the second broad, oblong, 3-nerved, narrowed near the tip to an acute or obtuse apex; lemmas scabrous, 5-6 mm. long, the teeth setaceous, awned from a little above the middle, the awn loosely twisted below, geniculate, divergent, 10-12 mm. long.

Wet mountain meadows, open woods and along streams.

4. T. cernuum Trin. ——→ Culms slender, lax, as much as 100 cm. tall; sheaths smooth or scaberulous; ligules 2-3 mm. long; blades thin and lax, 8-20 cm. long, 3-12 mm. wide, scabrous on both surfaces; panicles flexuous, 10-20 cm. long, the branches somewhat spreading, few flowered, naked below; spikelets 2-flowered; glumes very unequal, the first narrow, acuminate, lanceolate, 1-nerved, 1-4 mm., usually about 2 mm., long, the second oblong, 3-nerved, 4-5 mm. long, abruptly narrowed near the summit to an acute apex; lemmas scabrous, 5-6 mm. long, the teeth setaceous, the awns slender, flexuous, spreading, not twisted below, mostly 10 mm. long.

Moist meadows, woods, and rocky ledges.

16. Sphenopholis Scribn.

Perennials with flat blades and narrow panicles. Spikelets 2-flowered, disarticulating below the glumes, the rachilla prolonged beyond the upper floret as a slender bristle; first glume narrow, 1-nerved, the second broad, obovate, 3-5-nerved; lemmas acute, firm, scarcely nerved, somewhat exceeding the glumes.

1. S. obtusata (Michx.) Scribn. ⟶ Culms erect, 30-60 cm. tall; sheaths scabrous or nearly smooth; blades flat, scabrous, 5-15 cm. long, 2-5 mm. wide; panicles narrow, dense, more or less interrupted at the base, 5-10 cm. long; spikelets 2-2.5 mm. long; glumes scabrous; lemmas smooth and shining, or scabrous toward the tip.

Open woods and prairies. ⟶

⟶ Priest Lake, Epling 7762.

Deschampsia Beauv.

18. ~~Aira L.~~ Hairgrass.

Annuals or perennials with narrow or open panicles and shining, pale or purplish spikelets. Spikelets 2-flowered, disarticulating above the glumes, the rachilla prolonged beyond the upper floret; glumes nearly equal, membranaceous, acute or lanceolate; lemmas truncate, erose-dentate, awned from or below the middle, the awn straight, twisted or bent. (Aira L.)

o Plants annual; spikelets more than 5 mm. long — 1. D. danthonioides

o Plants perennial; spikelets less than 5 mm. long

2 Panicles narrow, elongate, the branches appressed;
6 awns distinctly exserted from the glumes — 2. D. elongata

2 Panicles open, the branches spreading;

6 awns included or only slightly exserted

4 Lemmas awned from the middle, the awns twisted
8 below; leaves relatively short and broad — 3. D. atropurpurea

4 Lemmas awned from near the base, the awns straight;
8 leaves narrow, elongate — 4. D. caespitosa

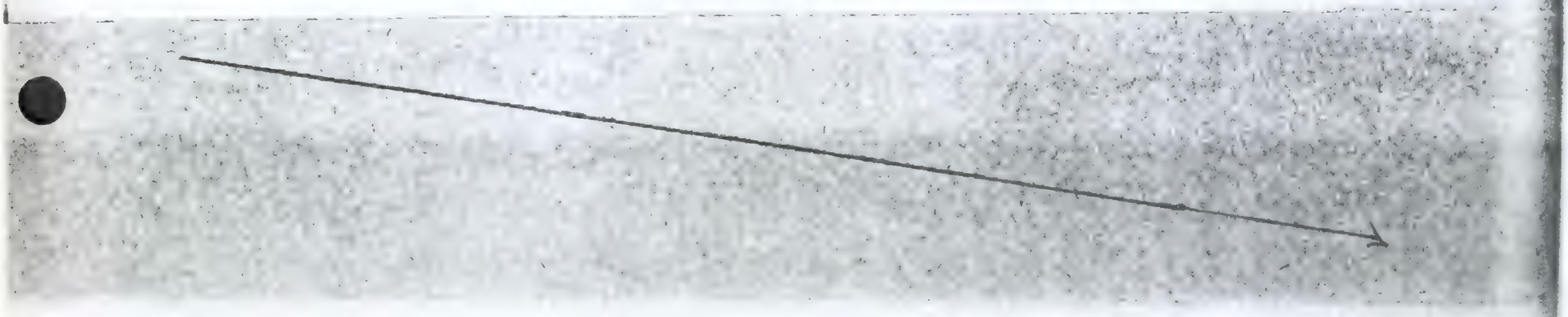
1. D. danthonioides (Trin.) Munro. Culms slender, erect or ascending, 10-40 cm. tall; sheaths smooth; ligules acuminate, 3 mm. long; blades smooth or scaberulous, very narrow, less than 5 cm. long; panicles open, 5-15 cm. long, the branches distant, stiffly spreading, naked below, the branchlets stiffly spreading, bearing 1-3 appressed spikelets; glumes nearly equal, lanceolate, exceeding the florets; 3-nerved, 5-8 mm. long; lemmas 2.5 mm. long, the awns twisted below, geniculate, 4-5 mm. long above the bend; prolongation of the rachilla prominent, more than half as long as the lemma, long-pilose above, the hairs reaching the tip of the lemma. (Aira ~~danthonioides~~ danthonioides Trin.)

Meadows and moist sandy river bottoms. ——→

——→ Coeur d'Alene, ~~Rust 20%~~; Thatuna Hills, ~~Epling and Hauck 9092, 9095.~~ →

2. D. elongata (Hook.) Munro. Culms densely tufted, erect, 15-70 cm. tall or sometimes taller; leaves clustered toward the base, the sheaths smooth; ligules 3-6 mm. long; blades lax, very narrow or as much as 2 mm. wide, smooth or scabrous; panicles narrow, flexuous, loose, as much as 30 cm. long, the branches distant, appressed; glumes 4-6 mm. long, exceeding the florets; lemmas 2 mm. long, the callus and prolongation of the rachilla pilose, the awn slender, straight, not twisted below, 4-5 mm. long.

Moist meadows and hillsides.



3. D. atropurpurea (Lahl.) Scheele Mountain Hair grass. ——>Culms tufted, erect, 20-70 cm. tall; sheaths smooth; ligules truncate, 3-4 mm. long; blades flat, appressed, 3-10 cm. long, 2-5 mm. wide, scaberulous; panicles open, 5-10 cm. long, the branches flexuous, distant, spikelet-bearing toward the ends; glumes equal, exceeding the florets, broad, 5 mm. long, narrowed to an acute apex, the first 1; the second 3-nerved; lemmas 2 mm. long, long-pilose on the callus, awned from the middle, the awns twisted below, that of the first floret straight, that of the second geniculate, included or somewhat exserted.

Woods and mountain slopes.

4. D. caespitosa (L.) Beauv. Tufted Hair grass. ——>Culms tufted, erect, as much as 120 cm. tall, leaves crowded toward the base, the sheaths smooth; ligules 3-8 mm. long; blades flat or folded, scabrous above, nearly smooth beneath, 5-20 cm. long, those of the innovations elongate, as much as 3 mm. wide; panicles open, drooping, 15-30 cm. long, the branches in distant fascicles, spreading, naked below; spikelets 4-5 mm. long; glumes lanceolate, equalling or a little shorter than the spikelets; florets distant; lemma 3 mm. long, awned from near the base, the awn straight, scarcely exserted.

Frequent in wet meadows.

Arrhenatherum elatius (L.) Mert. & Koch. Tall oatgrass. Reported to occur in our region but no herbarium specimen has been seen. Rather coarse perennial; with pale or purplish, shining panicles 15-30 cm. long; spikelets 2-flowered, the lower staminate, awned, the upper perfect, awnless. Fields and waste places; introduced from Europe.

Avena fatua L. Wild oat. Reported from our region but no herbarium specimen has been seen. Spikelets mostly 3-flowered, the lemmas covered with stiff brown or pale hairs, sometimes sparsely so, the awn stout, geniculate, twisted below, 3-4 cm. long. Fields and waste places; introduced from Europe. A common weed on the Pacific coast.

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18. Danthonia Lam. & DC. Oatgrass.

Tufted perennials with open or compact panicles; spikelets several-flowered, disarticulating above the glumes and between the florets; glumes lanceolate, acute, exceeding the florets; lemmas rounded on the back with a strong callus at the base, bearing a flat geniculate twisted awn from between the aristate teeth of a bifid apex.

D Panicles open, the branches spreading — 1. D. californica

o Panicles dense, the branches appressed, or the

4 panicles reduced to a single spikelet

2 Lemmas glabrous on the back

4 Spikelets several; sheaths glabrous or

8 sparsely pilose — 2. D. intermedia

4 Spikelets usually one, or sometimes two; sheaths

8 conspicuously retrorsely pilose — 3. D. unispicata

2 Lemmas sparsely pilose on the back — 4. D. spicata

1. D. californica Boland. Culms tufted, erect, 30-60 cm. tall; sheaths smooth with a tuft of hairs at the mouth; blades attenuate to a fine point, scabrous on both surfaces, 2-4 mm. wide; panicles open, with 2-5 spikelets, the branches pubescent, usually spreading or even reflexed, with rather conspicuous pulvini at the base; spikelets about 2 cm. long, the glumes exceeding the florets; lemmas glabrous on the back, pilose on the margins, the teeth long-aristate.

Cliffs along St. Maries R., 2900 ft., Leiberg 1069.

var. americana (Scribn.) Hitchc. Differs from the species in having pubescent or pilose sheaths.— ⟶

⟶ Dry or moist meadows and open ground. De Smet Mission, 2700 ft.; Moscow.

2. D. intermedia Vasey. Timber Oatgrass. Culms tufted, erect, 20-45 cm. tall; sheaths smooth or pubescent with a tuft of hairs at the mouth; blades flat or becoming involute, smooth, scaberulous or pilose, 3-10 cm. long, 1-3 mm. wide; inflorescence dense, 3-7 cm. long, the branches short and appressed; spikelets 10-15 mm. long; lemmas glabrous on the back, pilose on the margins, rather abruptly narrowed into the short aristate teeth.

Moist meadows, alkaline soil, and rocky ledges.

3. D. unispicata Munro. Similar to D. californica; culms 15-20 cm. tall; sheaths retrorsely long-pilose, sometimes densely so; blades rather short, clustered toward the base, scabrous or pilose; inflorescence reduced to a single spikelet, sometimes two but the lower then short-pedicellate and appressed; spikelets as in D. californica.

Dry hills and prairies. Coeur d'Alene; head of Little Potlatch R.

4. D. spicata (L.) Beauv. Culms densely tufted, erect, as much as 80 cm. tall; sheaths glabrous or sparsely pilose; blades flat, narrow, becoming curled with age, those on the innovations usually involute; panicle 2-6 cm. long, the branches one- to few-flowered, appressed; glumes acuminate, mostly 10-12 cm. long; lemmas 4-5 mm. long, sparsely pilose on the back and on the margins, abruptly narrowed, the teeth acute or acuminate, not aristate.

Dry open woods and rocky soil. Priest R., Christ 1177.

19. Calamagrostis Adans. Reedgrass.

Perennials with small spikelets and narrow, open or contracted panicles. Spikelets 1-flowered, the rachilla disarticulating above the glumes, prolonged behind the palea as a hairy bristle; glumes equal, acute or acuminate; lemmas shorter than the glumes, the callus hairy, awned from the back below the middle, the awn straight and included, or twisted below, geniculate, and protruding sideways from the glumes.

o Awns twisted below, protruding sideways from the glumes

2 Collars of the sheaths glabrous; awns 4-5 mm. long
6 above the bend — 1. C. purpurascens

2 Collars of the sheaths pubescent; awns 1-2 mm. long
6 above the bend — 2. C. rubescens

o Awns straight, included

2 Collars pubescent; callus hairs ½ as long as the
6 lemma — 3. C. Scribneri

2 Collars glabrous; callus hairs copious, as long
6 as the lemma — 4. C. canadensis

1. C. purpurascens R. Br. Culms tufted, sometimes producing short rhizomes, erect, 20-60 cm. tall; sheaths smooth or scaberulous; ligules prominent, 2-4 mm. long; blades stiff, firm, flat or loosely folded, scaberulous, strongly nerved, 5-15 cm. long, 2-4 mm. wide, those of the innovations elongate; panicles dense, 5-10 cm. long, usually purple-tinged; glumes equal, scabrous, 5-7 mm. long, the first 1-, the second 3-nerved; lemmas 4-5 mm. long, 4-nerved, scabrous, awned from near the base, twisted below, geniculate, 4-5 mm. long above the bend, protruding sideways from the glumes; produced rachilla 1.5-2 mm. long.

Rocky soil and hillsides at higher altitudes. → 6000 ft.

not → Snowy Top Mt., ~~Anderson 297~~; Wiessner's Peak, ~~1850 m., Leiberg 1477~~; Upper Glidden Lake, 4000-5900 ft. ~~Chase 5045~~ →

Cap.

2. C. rubescens Buckl. Pine grass. →Culms erect, with rhizomes 40-120 cm. tall; sheaths scabrous, pubescent on the collar; ligules 2-4 mm. long; blades flat, rather thin, scabrous, usually attenuate to a fine involute point, 1-3 mm., rarely as much as 5 mm. wide; panicle narrow, dense, often interrupted at the base, 5-15 cm., usually about 10 cm., long; glumes 4-5 mm. long, 6 mm. in exceptional specimens, scabrous or nearly smooth, the first 1-nerved, the second 3-nerved, the lateral nerves inconspicuous; lemmas 3-4 mm. long, smooth, thin, faintly nerved, the tip erose, awned from near the base, the awn twisted below, geniculate, 1-2 mm. long above the bend, protruding sideways from the glumes; rachilla produced about 1 mm.

Open woods, mountain slopes and ledges.

3. C. Scribneri Beal. → Culms erect or ascending with rhizomes, as much as 120 cm. tall; sheaths scaberulous, sparsely pilose, rather densely pubescent on the collar; ligules conspicuous, 4-5 mm. long; blades thin, lax, scabrous on both surfaces, as much as 25 cm. long and 7 mm. wide; panicles narrow, rather dense but open, 10-15 cm. long, the branches spikelet-bearing from near the base; glumes acuminate, scabrous, 4 mm. long, the first 1-, the second 3-nerved; lemmas 3 mm. long, the callus hairs about half as long as the lemma, awned from below the middle, the awn slender, straight, included; prolongation of the rachilla minute, the hairs short. =1

Rich soil of lake shores. →

no H → Lake Coeur d'Alene, Sandberg, et al 564. →

4. C. canadensis (Michx.) Beauv. Bluejoint. → Culms erect, with rhizomes, 50 to as much as 140 cm. tall; sheaths smooth or scabrous, glabrous on the collar; ligules 4-7 mm. long; blades flat, lax, scabrous, as much as 45 cm. long and 8 mm. wide, usually about 25 or 30 cm. long and less than 5 mm. wide; panicles flexuous, open, 10-20 cm. long; glumes acute or acuminate, scabrous at least on the keel; lemmas about 3-4 mm. long, the callus hairs as long as the lemma, awned from below the middle, the awn slender, straight, included; prolongation of the rachilla one-third as long, the hairs as long as the lemma.

Open woods, meadows, and wet places.

20
~~18~~. Agrostis L. Bentgrass.

Perennial grasses with open or contracted panicles of small spikelets. Spikelets 1-flowered, disarticulating above the glumes, the rachilla not prolonged behind the palea, prolonged in A. thurberiana; glumes nearly equal, acute or acuminate; lemmas obtuse, thinner in texture and shorter than the glumes, sometimes hairy on the callus; palea usually reduced to a small nerveless scale.

o Rachilla prolonged behind the palea — 1. A. thurberiana

o Rachilla not prolonged

2 Palea present, more than half as long as the 6 lemma — 2. A. ~~palustris~~ alba

2 Palea wanting or a small nerveless scale

4 Rhizomes present — 3. A. diegoensis

4 Rhizomes wanting

6 Panicles diffuse, the spikelets clustered 10 toward the ends of the slender, very scabrous branches — 4. A. ~~hiemalis~~ scabra

6 Panicles often loose but not diffuse, the 10 branches relatively short

8 Panicles dense, the branches spikelet-12 bearing from the base; glumes scabrous on the back — 5. A. exarata

8 Panicles loose, the branches naked below; 12 glumes glabrous on the back, scabrous on the keel

10 Culms delicate, less than 40 cm. tall; 14 spikelets 1.5-2 mm. long — 6. A. idahoensis

10 Culms slender but not delicate, more 14 than 40 cm. tall; spikelets 2.5-3 mm. long — 7. A. oregonensis

1. A. Thurberiana Hitchc. ——→Culms tufted, slender, rather weak, 10-45 cm. tall; leaves mostly erect in a basal cluster; sheaths smooth; ligules obtuse, about 1 mm. long; blades flat, 5-10 cm. long, 1-2 mm. wide, scaberulous or nearly smooth; panicles flexuous, 5-10 cm. long, the branches slender, spreading, in distant fascicles, naked below; glumes 1-nerved, 2 mm. long, glabrous, or somewhat scabrous on the keel; lemmas as long as the glumes, awnless, 3-nerved, glabrous, the callus with a few short hairs; palea present, nearly as long as the lemma; rachilla prolonged behind the palea as a minute bristle.

Wet meadows and mossy places.

2. A. ~~palustris Huds~~ alba L. Redtop. ——→Culms erect or decumbent at the base, as much as 120 cm. tall; sheaths smooth; ligules prominent, 2-5 mm. long; blades flat, scabrous, rather firm, 3-15 cm. long, 2-7 mm., mostly 3-5 mm., wide; panicles open, mostly 10-30 cm. long, the lower branches in whorls, at least some of them spikelet-bearing from near the base; glumes 2-3 mm. long, glabrous except the scabrous keel; lemmas obtuse, a little shorter than the glumes, awnless; palea as much as two-thirds as long as the lemma. (A. palustris Huds.)

Meadows, fields, roadsides, and waste places.

3. A. diegoensis Vasey. ——→Culms erect, with slender rhizomes, 90 cm. tall; sheaths smooth or scabrous; ligules 5 mm. long; blades flat, very scabrous on both surfaces, 10-15 cm. long, 2-4 mm. wide; panicles narrow but open, 20 cm. long, the branches slender, distant in fascicles, naked below, short ones intermixed, making the branches appear to be spikelet-bearing from the base; glumes 3 mm. long, scabrous on the keel, the first 1-nerved, the second 1-3-nerved; lemmas thin, membranaceous, 5-nerved, 2 mm. long, awnless; palea wanting. (A. foliosa Vasey).

[illegible] ground along creek. ——→

not ——→Paradise Cr., Moscow, Henderson 4611.

(scabra Willd.

4. A. ~~hiemalis (Walt.) B.S.P.~~ Rough Hairgrass, Pricklegrass. Culms slender, tufted, erect, 15-70 cm. tall; sheaths smooth; ligules 2-3 mm. long; basal blades narrow, flat or folded, smooth, soft and lax, those of the culm scabrous, flat, usually rather firm, 5-10 cm. long, 1-2 mm. wide; panicles diffuse, 5-25 cm. long, the capillary branches widely spreading, very scabrous, spikelet-bearing only toward the ends; glumes acuminate, 1-nerved, 2 mm. long, scabrous on the keels; lemmas 1.5 mm. long, awnless; palea wanting. =1

Meadows and wet places.

5. A. exarata Trin. Culms erect, 20-80 cm. tall; sheaths smooth or scabrous; ligules 3-8 mm. long; blades flat, scabrous, 5-25 cm. long, 2-8 mm. wide; panicles dense, sometimes interrupted, 3-20 cm. long, the branches appressed, spikelet-bearing from the base; glumes acuminate, 1-nerved, 2-3 mm. long, distinctly scabrous over the back; lemmas about 2 mm. long, awnless; palea very small or wanting. (A. grandis Trin.; A. asperifolia Trin.).

Meadows, swamps, and moist places.

6. A. idahoensis Nash. Culms very slender, tufted, 10-40 cm. tall; sheaths smooth; ligules 2-3 mm. long; blades usually flat, scaberulous or nearly smooth, 1-3 cm. long, rarely more than 2 mm. wide; panicles delicate, 3-10 cm. long, the branches slender, flexuous, spreading, naked below; glumes acute or acuminate, 1.5-2 mm. long, smooth or somewhat scabrous on the keel; lemmas about 1 mm. long, awnless; palea minute.

Mountain meadows and wet places.

7. A. oregonensis Vasey. ——→Culms erect, 70 cm. tall; sheaths smooth; blades flat, lax, scabrous, 8-12 cm. long, 2-4 mm. wide; panicles loose, open, about 20 cm. long, the branches slender, flexuous, in rather distant fascicles, the lower as much as 8 cm. long, naked on the lower half; glumes acuminate, scabrous on the keel, otherwise glabrous, 2.5-3 mm. long; lemma 1.5 mm. long, awnless; palea .5 mm. long.

Bogs, marshes, and wet meadows. ——→

no H ——→Wallace, 2728-4000 ft., Chase 5010.

21. Cinna L.

Tall perennials with long open panicles and broad flat blades. Spikelets 1-flowered, disarticulating below the glumes, the rachilla produced behind the palea as a minute bristle; glumes nearly equal, 1-nerved; lemmas about as long as the glumes, 3-nerved, short-awned from the back just below the apex.

1. C. latifolia (Trev.) Griseb. Sweet Reedgrass. ——→Culms single, erect, as much as 150 cm. tall; sheaths scaberulous; ligules 4-6 mm. long; blades flat, acuminate, rather thin, lax, scabrous on both surfaces, 10-25 cm. long, 8-15 mm. wide; panicles 20-30 cm. long, the branches slender, flexuous, naked below; glumes acuminate, scabrous, hispid on the keels, 3-4 mm. long; awn of lemma nearly obsolete to 1 mm. long.

Swamps, river banks, and wet places.

2Q. Alopecurus L.

Perennials with dense, cylindrical, spike-like panicles. Spikelets 1-flowered, laterally compressed, the rachilla disarticulating below the glumes; glumes equal, awnless, ciliate on the keel, distinct or barely united at the base; lemmas as long as the glumes, 5-nerved, awned from the back below the middle, the awn straight or geniculate, included or exserted; palea wanting.

0 Awns straight, included or only slightly exserted — 1. A. aequalis

0 Awns geniculate, spreading, long-exserted

2 Glumes acute, 4 mm. long, pilose all over the
6 back; rhizomes present — 2. A. alpinus

2 Glumes obtuse, 3 mm. long, pilose on the nerves
6 but not all over the back; rhizomes wanting — 3. A. pallescens

1. A. aequalis Sobol. Little Meadow-foxtail. →Culms erect or ascending, often decumbent at the base and rooting at the nodes, 15-50 cm. tall; sheaths smooth; ligules 2-5 mm. long; blades flat, scabrous, 3-12 cm. long, 2-4 mm. wide; panicles 3-6 cm. long, 3-5 mm. wide; glumes obtuse, 2-2.5 mm. long, pilose on the keel, and sparsely so on the back below; lemmas obtuse, the awn straight, included or exserted about 1 mm. (A. aristulatus Michx.; A. geniculatus aristulatus (Michx) Torr.).

In water, swamps and wet places.

2. A. alpinus J. E. Smith. →Culms erect, with rhizomes, 30-70 cm. tall; sheaths smooth; ligules obtuse, 3-5 mm. long; blades flat, firm, scabrous above, smooth beneath, 8-15 cm. long, 3-5 mm. wide; panicles 2-4 cm. long, 8-10 mm. wide, dark green, tinged with purple; glumes acute, 4 mm. long, pilose over the entire back; lemmas obtuse, the awn from curved and spreading to nearly straight, 4-8 mm. long. (A. occidentalis Scribn. and Tweedy).

Meadows and river banks. →

no ¶ →St. ~~Marys~~ Maries R., ~~[illegible] Leibers 1078~~ (2900 ft.; St. Maries. ~~Henderson 2326~~ →

S. A. pallescens Piper. Culms tufted, erect or ascending, 20-40 cm. tall; sheaths smooth; ligules 4-5 mm. long; blades flat, scabrous on both surfaces, 5-20 cm. long, 3-5 mm. wide; panicles 4-7 cm. long, about 6 mm. wide, pale green, not tinged with purple; glumes obtuse, 3 mm. long, pilose on the nerves; lemmas obtuse, the awns geniculate, 6-8 mm. long.

Wet meadows.

Moscow; Little Potlatch R.

23. Phleum L. Timothy.

Perennials with dense cylindrical or subcylindrical panicles. Spikelets 1-flowered, laterally compressed, disarticulating above the glumes; glumes equal, abruptly mucronate or short-awned, 3-nerved, the lateral nerves close to the keel, the keels stiffly ciliate; lemmas shorter than the glumes, truncate, hyaline, 3-5-nerved; palea narrow, about as long as the lemma.

o Inflorescence two to four times longer than wide;
4 awns of the glumes 2-2.5 mm. long — 1. P. alpinum

o Inflorescence narrow, several times longer than
4 wide; awns of the glumes 1-1.5 mm. long — 2. P. pratense

1. P. alpinum L. Mountain Timothy. Culms erect from a decumbent base, 20-50 cm. tall; sheaths smooth; ligules truncate or obtuse, 1-2 mm. long; blades flat, scabrous, erect, 5-15 cm. long, 3-10 mm. wide; panicles ovoid-cylindric, 2-5 cm. long, about 1 cm. thick; glumes 4 mm. long, not including the awns, sparsely scabrous.

Wet mountain meadows and river banks. Near Stevens Peak, 5700 ft.; St. Maries R., 2900 ft.

2. P. pratense L. Timothy. ——→Culms erect from a somewhat swollen bulb-like base, as much as 120 cm. tall; sheaths smooth; ligules 2-3 mm. long; blades flat, scabrous, 10-30 cm. long, 2-6 mm. wide; panicles 3-10 cm. long, 5-8 mm. wide; glumes 3 mm. long not including the awns, densely scabrous.

Fields and waste places.

24. Muhlenbergia Schreb.

Low perennials or sometimes annuals, with narrow panicles. Spikelets 1-flowered, the rachilla disarticulating above the glumes; glumes shorter than the lemma, nearly equal, acute or obtuse, 1-nerved; lemmas membranaceous, lanceolate, 3-nerved, awnless.

o Culms finely nodulose-roughened; glumes two-thirds
4 the length of the spikelet, usually acute — 1. M. Richardsonis

o Culms smooth; glumes not more than half the length
4 of the spikelet, obtuse — 2. M. filiformis

1. M. Richardsonis (Trin.) Rydb. Perennial; culms wiry, densely tufted, erect, ascending or prostrate and rooting at the nodes, the ends ascending, sparingly branching, 10-30 cm. long, nodulose-roughened; sheaths smooth; ligules 1-2 mm. long; blades firm, flat or folded, scabrous, .5-6 cm. long, 1 mm. wide; panicles narrow, 2-6 cm. long, the branches appressed, floriferous from the base; spikelets short-pediceled, appressed; glumes acute or obtuse, 1-nerved, 1.5-2 mm. long; lemmas 2-3 mm. long, scabrous toward the tip.

Dry or moist banks of streams and lakes.

2. M. filiformis (Thurb.) Rydb. → Annual or perennial; culms erect or spreading at the base, slender, smooth, 2-20 cm. tall; sheaths smooth; ligules about 1 mm. long; blades scabrous, flat or folded .5-4 mm. long, less than 1 mm. wide; panicles narrow, 1-4 cm. long, the branches appressed, few flowered; glumes ovate, obtuse, 1-nerved, 1 mm. long; lemmas 2 mm. long, scabrous at the tip.

Moist meadows and ledges.

25. Oryzopsis Michx. Mountain Rice.

Short perennials with narrow panicles. Spikelets 1-flowered, the rachilla disarticulating above the glumes; glumes equal, obtuse or abruptly acute; lemmas about as long as the glumes, indurate, sparsely pilose, with a short, blunt, pilose callus, awned, (in our species from between the teeth of a bifid apex), the awns short, deciduous; palea indurate, as long as and inclosed by the lemma.

O Glumes 1-3 nerved, 4-5 mm. long; blades involute — 1. O. exigua

o Glumes 7-9 nerved, 6-8 mm. long; blades broad and flat — 2. O. asperifolia

1. O. exigua Thurb. Culms densely tufted, about 30 cm. tall; sheaths smooth; ligules acuminate, 4 mm. long; blades firm, involute, scabrous, 5-10 cm. long; panicles narrow, few-flowered, 4-8 cm. long, the branches appressed; glumes broad, 1-3 nerved, 5 mm. long, scabrous; lemmas as long as or a little longer than the glumes, the teeth blunt, 1 mm. long, the awn 6-7 mm. long, twisted below, geniculate at right angles or even recurved, 4 mm. long above the bend.

Ledges and crevices of rocks. Divide betw. Mullan and Canyon Cr., 5100 ft.; Clearwater Nat. For.

2. O. asperifolia Michx. Culms in small dense tufts, the fertile ones spreading or prostrate, nearly leafless; blades on the innovations erect, elongate, narrowed toward both ends, 4-8 mm. wide, scabrous on the margins; panicle narrow, 5-8 cm. long, few-flowered, the branches appressed; glumes 6-8 mm. long, broad, abruptly pointed, 7-9 nerved, more or less reticulate-veined; lemma about as long as the glumes, pubescent, the awn straight, 5-10 mm. long.

Dry open woods. Bonners Ferry, Christ 1025.

26. Stipa L.

Tufted perennials with narrow compact panicles; spikelets 1-flowered, disarticulating above the glumes, the articulation oblique, forming a blunt or sharp-pointed, hairy callus; glumes equal, membranaceous, acuminate; lemmas convolute, indurate, terete, awned, the awn twisted and twice geniculate, persistent; palea inclosed within the lemma.

o Awns plumose to the second bend. — 1. S. Elmeri

o Awns appressed-pubescent or scabrous.

2 Lemma 8-12 mm. long; terminal segment of awn flexuous. — 2. S. comata

2 Lemma less than 7 mm. long; terminal segment of awn straight.

4 Sheaths and culms glabrous.

6 Glumes broad, the first 5-nerved. — 3. S. lemmoni

6 Glumes narrower, the first 3-nerved. — 4. S. columbiana

4 Sheaths and culms densely pubescent, especially below the nodes. — 5. S. Williamsii

1. S. Elmeri Piper and Brodie. —→Culms erect, puberulent, densely retrorsely pubescent below the nodes, about 70 cm. tall; sheaths pubescent; ligules less than .5 mm. long; blades flat or involute, densely pubescent on both surfaces or nearly glabrous above, as much as 30 cm. long, 2-3 mm. wide, those of the innovations longer and more closely involute; panicles narrow, 10-30, usually about 15 cm. long, the branches appressed; glumes equal, 3-nerved, membranaceous, 10-12 mm. long, gradually tapering to a thin point; lemma dark brown at maturity, 6-7 mm. long, the callus slender, pointed, 1 mm. long; awns twice geniculate, the first two segments twisted and plumose, about 1 cm. long, the third straight, mostly 2 cm. long.

Dry prairie. —→

no 4 —→Coeur d'Alene, Rust 347.

2. Stipa comata Trin. and Rupr. —→Culms in dense tufts, 30-60 cm. tall; blades usually involute, often elongate, firm, scabrous; ligule thin, 3-4 mm. long; panicle 10-20 cm. long, included at the base, the slender ascending branches in rather distant fascicles; glumes thin, attenuate, 1.5 =/ 2 cm. long; lemma mostly 1 cm. long, pale, the densely hairy callus 3 mm. long, the body sparsely pubescent or nearly glabrous; awn 10-15 cm. long, the terminal segment slender, flexuous.

Dry hills and plains. ——————————→

not ——→ Odin Bay; Lewistown.

3. S. lemmoni (Vasey) Scribn. ——→ Culms tufted, erect, mostly 30-40 cm. (as much as 80 cm.) tall; leaves usually in a basal cluster; sheaths smooth; ligules membranaceous, 1-3 mm. long, the blades involute, glabrous beneath, more or less pubescent on the upper surface, 5-20 cm. long, the branches appressed; glumes equal, acuminate, 8-10 mm. long; the first 5-nerved, the second 3-nerved, or sometimes 5-nerved, the lateral nerves obscure; lemmas 6 mm. long, sparsely pilose, the callus short and blunt, the awns 16-20 mm. long, twice geniculate, the first two segments twisted, appressed-pubescent, the third straight, scabrous.

Dry, rocky soil on mountain summits, ——————————→

not ——→ Moscow Mts., Henderson 4615.

4. S. columbiana Macoun. ——→ Culms loosely tufted, erect, 30-100 cm. tall; blades flat or loosely involute, elongate, scaberulous or nearly smooth; ligule 1-2 mm. long; panicles narrow, rather dense, as much as 20 cm. long, the branches appressed, spikelet-bearing from the base; glumes rather firm, acuminate, about 1 cm. long; lemma 6-7 mm. long, evenly pubescent, becoming brown at maturity; awns 2-2.5 cm. long.

Open woods, dry plains, and meadows. ——————————→

not ——→ St. Maries River; Coeur d'Alene; Wrencoe.

5. S. Williamsii Scribn. ——→ Culms erect, 70-90 cm. tall, densely pubescent below the nodes; sheaths pubescent; ligules less than .5 mm. long; blades flat, attenuate and involute toward the end, smooth below, scabrous and sparsely pilose above, as much as 30 cm. long, 3-4 mm. wide, those of the innovations elongate and usually narrower; panicles narrow, dense, 20-25 cm. long, the branches appressed; glumes equal, acuminate, 3-nerved, 8 mm. long; lemmas about 6 mm. long, brownish, pilose with appressed white hairs of about equal length, the callus sharp pointed, the awn slender, twice-geniculate, loosely twisted to the second bend, 20 mm. long.

Dry hills and plains. ——————————→

not ——→ Latah Co.

↘

27. Beckmannia Host.

Stout annuals with broad flat blades and rather long dense panicles. Spikelets 1-flowered, disarticulating below the glumes, laterally compressed, circular in outline, densely imbricate in two rows on one side of a continuous rachis; glumes equal, inflated, rounded, the apex apiculate, lemmas narrow, 5-nerved, acuminate ~~pointed~~, about as long as the glumes.

1. B. syzigachne (Steud.) Fernald. Sloughgrass. Culms stout, erect, 45~~-100~~ cm. tall; sheaths smooth; ligules prominent, about 5 mm. long; blades flat, appressed or ascending, scabrous on both surfaces, 10-25 cm. long, 4-10 mm. wide; panicles narrow, dense, 15-30 cm. long, the short branches appressed or stiffly spreading.

Moist meadows, sloughs, and along ditches. Until recently this has been referred to a European species, B. erucaeformis (L.) Host.

28. Spartina Schreb. Cordgrass.

Stout perennials with scaly rhizomes and numerous ascending or spreading spikes along a common axis; spikelets 1-flowered, laterally compressed, sessile and closely imbricate on one side of a continuous rachis, disarticulating below the glumes; glumes keeled, 1-nerved, awned (in our species); lemmas keeled, firm, 1-nerved; palea 2-nerved, keeled between the nerves, a little longer than the lemmas.

1. S. pectinata Link. Prairie Cordgrass. Culms stout, erect from strong rhizomes, as much as 140 cm. tall; sheaths smooth; blades firm, scabrous above, smooth beneath, as much as 8 mm. wide, attenuate to a long fine point; glumes hispid on the keels, the second about twice as long as the first, the awn up to 7 mm. long; lemmas hispid on the keels, narrowed to a rather obtuse, 2-lobed apex.

Sandy lake shores and rocky river banks. Coeur d'Alene; Thompson, 2000 ft.; Lake Tessemini.

29. Phalaris L.

Tall perennials with broad flat blades and narrow spikelike panicles. Spikelets laterally compressed, disarticulating above the glumes with a single terminal perfect floret and two appressed rudimentary lemmas below it; glumes equal, acute, 3-nerved, strongly keeled, the keel sometimes narrowly winged; lemmas shorter than the glumes, indurate, sparsely pilose; palea indurate, as long as the lemma.

1. P. arundinacea L. Reed Canary Grass. ⟶Culms stout, erect with rhizomes, as much as 180 cm. tall; sheaths scaberulous; ligules broad and prominent, 4-8 mm. long; blades flat, smooth or scabrous, as much as 30 cm. long, 15 mm. wide; panicles narrow, interrupted, the branches appressed, densely flowered, floriferous from the base; glumes 4-5 mm. long, scabrous; fertile lemmas 3-4 mm. long, shining, sparsely pilose, the rudimentary ones half as long, pilose.

Wet meadows and lake shores.

30. Panicum L.

Annuals or perennials with open panicles; spikelets articulate below the glumes, with one perfect terminal floret and a sterile one below it; glumes membranaceous, unequal, the first less than half the length of the spikelet, the second equaling the sterile lemma; sterile lemmas similar to the glumes in texture, commonly inclosing a hyaline palea; fertile lemmas chartaceous-indurate, smooth and shining, the margins inrolled, inclosing a palea of similar texture.

0 Plants annual; basal blades similar to those of
4 the culm — 1. P. ~~barbipulvinatum~~ capillare

0 Plants perennial; basal blades different from those
4 of the culm, forming a winter rosette

2 Upper surface of the blades glabrous or nearly
6 so; culms sparsely pilose — 2. P. occidentale

2 Upper surface of the blades papillose pilose;
6 culms rather densely papillose pilose — 3. P. pacificum

1. P. ~~barbipulvinatum Nash~~ capillare var. occidentale Rydb. ⟶ Rydb. Western Witchgrass. Culms erect, branching at the base, 10-30 cm. tall; sheaths longer than the internodes, papillose-hispid; blades usually erect, flat, 3-10 cm. long, 3-5 mm. wide, hispid on both surfaces; panicles half the length of the culms, diffuse, the slender branches divaricate; spikelet bearing toward the ends; spikelets 3 mm. long, acuminate; first glume pointed, about two-fifths the length of the spikelet; second glume and sterile lemma exceeding the fruit, 7-9-nerved; fruit 1.8 mm. long. (P. barbipulvinatum Nash).

Meadows and waste places. ⟶

not ⟶ St. Maries, 2700 ft., Epling and Offord 8050.

2. P. occidentale Scribn. → Culms tufted, erect or ascending, 20-50 cm. tall, sparsely pilose; sheaths papillose-pilose, overlapping; ligules hairy, 3-4 mm. long; blades firm, erect or nearly so, 3-6 cm. long, 4-8 mm. wide, glabrous above or sparsely pilose toward the base, appressed-pubescent below; panicles 3-6 cm. long, about as broad as long, the axis nearly glabrous; spikelets 1.8 mm. long, strongly nerved, pubescent; first glume obtuse, about one-fourth the length of the spikelet; fruit about as long as the second glume and sterile lemma, somewhat exposed at maturity. Autumnal phase sparingly branching from the lower nodes, forming short tufts with reduced panicles and reduced nearly glabrous blades.

Moist lake shores. →

→ Priest Lake ~~(Piper 2776)~~; Coeur d'Alene Lake, ~~Sandberg, Heller and MacDougal in 1892~~ →

3. P. pacificum Hitchc. & Chase. → Culms tufted, erect or spreading, as much as 50 cm. tall, papillose-pilose, densely pilose at the nodes; sheaths papillose-pilose; ligules of conspicuous hairs, 4 mm. long; blades firm, erect or ascending, 2-8 cm. long, 3-8 mm. wide, acuminate, papillose-pilose above, densely appressed-pubescent beneath; panicles 3-6 cm. long, about as broad as long; the branches rather few flowered; spikelets 1.8-2 mm. long, obtuse, strongly nerved, papillose-pilose; first glume obtuse, about one-third the length of the spikelet; fruit usually exposed at maturity, as long as the second glume and sterile lemma. Autumnal phase much branched, decumbent, spreading, the leaves and panicles much reduced.

Lake shores, wet places, and rocky ledges.

Panicum Scribnerianum Nash, with glabrous or sparsely pilose spikelets, 3.2-3.3 mm. long, has been collected in Nez Perces Co., (Sandberg, ~~Heller~~ *et al* ~~and MacDougal~~ in 1892) and may be found in the southern part of our region.

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39. Echinochloa Beauv.

Tall annuals with open panicles of dense, one-sided, spikelike racemes. Spikelets stiffly hispid, short-pedicellate in clusters on one side of the panicle branches; first glume 3-nerved, abruptly acute, about half the length of the spikelet; second glume and sterile lemma acuminate, the glume mucronate, or short-awned, the lemma irregularly but usually long-awned; fertile lemmas acuminate, indurate, smooth and shining, the margins inrolled below, flat above, the apex of the palea not inclosed.

1. E. crusgalli (L.) Beauv. Barnyard Grass. ——→ Culms erect or ascending, as much as 110 cm. tall; sheaths compressed, smooth; blades flat, scabrous on the margins, otherwise nearly smooth, 8-25 cm. long, 5-12 mm. wide; panicles mostly 10-15 cm. long, the branches ascending or spreading, usually densely flowered; spikelets 3 mm. long, green or tinged with purple; first glume clasping; second glume and sterile lemma hispid on the nerves, scabrous or hispidulous between the nerves, the sterile lemma inclosing a well developed palea, the awn mostly 2-5 mm. long; fertile lemma about as long as the spikelet, acuminate-pointed.

H ——→ Bogs, cultivated fields, and waste places. ——→

noH ——→ St. Maries, 2700 ft. ~~Epling and Offord 8010, 8056; Epling and Putnam 10298~~

39a. Setaria Beauv. ~~(Chaetochloa Scribn.)~~

Annuals (in our species) with narrow spikelike panicles. Spikelets subtended by persistent bristles, the spikelets deciduous, awnless; first glume acute, 3-nerved, less than half as long as the spikelet; second glume and sterile lemma 5-nerved; fertile lemma indurate, usually rugose. ——→ (Chaetochloa Scribn.).

1. S. viridis (L.) Beauv. Green Foxtail. Culms erect, 50 cm. tall; sheaths smooth; ligules composed of hairs, about 1 mm. long; blades flat, rather thin, scabrous, with a white cartilaginous margin, 10-20 cm. long, as much as 1 cm. wide; panicles compact, tapering toward the tip, mostly less than 8 cm. long, the axis densely pubescent and also pilose; bristles 1-3 below each spikelet, ~~antrorsely~~ scabrous, 6-8 mm. long; spikelets 2-2.5 mm. long; second glume and sterile lemma about equal, nearly covering the fruit; fruit minutely transversely rugose.

A weed in cultivated places; introduced from Europe. ——→

noH ——→ Moscow, Henderson 2849.

53. Andropogon L. Beardgrass.

Perennials with solid culms, the spikelets in spikelike racemes, these single on peduncles from spathelike sheaths. Spikelets arranged in pairs at each node of an articulate rachis, one sessile, the other pedicellate, the sessile with one perfect terminal floret and a sterile one below it, the pedicellate reduced to a glume; glumes equal, coriaceous; fertile lemmas hyaline, awned from between the teeth of a bifid apex, the awn geniculate, tightly twisted below; palea minute; sterile lemmas hyaline, awnless, empty, shorter than the glumes.

1. A. scoparius Michx. Culms tufted, erect, branching from the upper nodes; sheaths keeled, scaberulous or nearly smooth; blades flat or conduplicate, scabrous on the margins, the surfaces smooth or scaberulous, 4-10 cm. long, 2-3 mm. wide; racemes about 5 cm. long, more or less flexuous, the joints and pedicels hairy on the margins; sterile spikelets 2-4 mm. long; fertile spikelets 8 mm. long, the awns about 8 mm. long above the bend. (Schizachyrium scoparium (Michx.) Nash).

H Sandy river banks. ——————————→

H ——→Thompson, ~~660 m.~~ 2000 ft., Leiberg 1615.

New species and new combinations made in this work

Delphinium Burkei subsp. distichiflorum (Hook.) Ewan, comb. nov.

Heuchera Houckii Epling, sp. nov.

Epilobium tenue (Trel.) Epling, comb. nov.

Lomatium tenuissimum (Geyer) Epling & Ewan, comb. nov.

Castilleia gibba Pennell, sp. nov.

Penstemon flavescens Pennell, sp. nov.

Penstemon Eplingii Pennell, sp. nov.

Hieracium canadense subsp. scabriusculum (Schwein.) Epling, comb. nov.

Arnica crassa Epling, sp. nov.

~~Tofieldia~~ occidentalis subsp. ~~curta Epling, subsp. nov.~~

GLOSSARY

Abortion, arrested and consequently imperfect development or non-development of an organ. Abortive, incompletely or imperfectly formed.

Acaulescent, without proper stems or apparently so.

Accrescent, enlarging after anthesis or with continued growth.

Accessory, additional.

Acerose, stiff, pine-needle-like.

Achene, small dry indehiscent 1-chambered 1-seeded fruit..

Acicular, sharp and needle-like.

Actinomorphic, radially symmetrical.

Acuminate, tapering to a point as though whittled away.

Acute, sharply pointed but usually not tapered.

Adherent, united with another body or organ of a different kind.

Adnate, adhering to; spoken of various organs such as an adnate filament which is adherent to the corolla.

Adventitious, appearing in other than the usual place, as of buds which arise other than at the nodes.

Aerial, growing in the air, hence above ground-line.

Alternate, not opposite; one from each node, esp. of leaves.

Alveolate, like a honey-comb.

Ament, a catkin, q.v.

Amplexicaul, clasping the stem.

Anastomosing, connecting so as to form a well-defined network.

Androecium, the stamens as a whole.

Annual, of one year's duration from sown seed to death.

Annular, ringlike.

Anterior, at the front or tip; the side away from the axis; inferior.

Anther, that part of the stamen containing the pollen.

Anthesis, the time of full development of the flower when the stamens and pistil are functioning and receptive.

Apetalous, without petals.

Apical, at the tip.

Apiculate, bearing a minute point at the apex.

Apogamous, developed without fertilization.

Appressed, lying close to, as of flowers against the stem or hairs against the surface of a leaf.

Approximate, close together but still not crowded.

Aquatic, living normally in water, wholly submersed or with only the base in water.

Arachnoid, cobwebby: of soft slender tangled hairs not kinked.

Arcuate, bent like a bow.

Areolate, divided into small areas; reticulate.

Aril, an appendage growing at or about the hilum of a seed. Arilate, having an aril.

Aristate, tipped with a short bristle or slender projection.

Articulate, jointed.

Ascending, rising obliquely upwards, as at an angle of 45°.

Asexual, without sex.

Attenuate, long-tapering.

Auricle, a flap-like appendage more or less resembling an ear growing at the base of a leaf or petal. Auriculate, possessing auricles.

Awl-shaped, slenderly tapering as in a pen-holder to a slender or rigid point.

Awn, a slender stiffish bristle. Awned, provided with a bristle.

Axil, the angle formed by a leaf with the stem. Axillary, borne within or pertaining to an axil.

Baccate, pulpy as in a grape.

Barbed, furnished with rigid sharp teeth which point backwards, as in a fish-hook.

Basal, at the base.

Basifixed, attached at the base.

Bearded, provided with a tuft of hairs.

Berry, a simple fleshy fruit in which the seeds are immersed in pulp as in the grape; indehiscent.

Biennial, of two year's duration.

Bifid, 2-cleft to about the middle.

Bilabiate, with two lips; said of certain tubular corollas such as those of the snapdragon, or of calyces.

Bipinnate, twice-pinnate.

Biseriate, in two series or rows.

Bisexual, having both sexes, i.e., both stamens and pistils.

Biternate, twice-ternate.

Bladdery, thin and inflated, balloon-like.

Blade, the expanded portion of a leaf as distinguished from the petiole, or of a petal.

Bract, a more or less modified leaf, usually small, from the angle of which a flower or flower-cluster arises. Bracteate, having bracts. Bractlet a bract of secondary order or very minute, subtending a flower or inserted on the pedicel.

Bristle, a stiff hair or similar outgrowth.

Bud, rudimentary state of stem or leaf; unexpanded flower.

Bulb, fleshy subterranean organ of closely imbricated modified leaves.

Caducous, dropping very early; of leaves or bracts.

Caespitose, growing in tufts.

Callus, a small protuberance; in grasses the tough often hairy swelling at the base of the lemma and palea.

Calyx, the outer cycle of flower parts, usually green.

Campanulate, bell-shaped.

Canescent, gray with fine close pubescence.

Capillary, hairlike.

Capitate, head-shaped.

Capsule, a dry dehiscent fruit composed of more than one carpel, hence usually with two or more chambers.

Carpel, a simple pistil or one of the units within a compound pistil which is thought to embody a modified seed-bearing leaf, joined to others to form the pistil, hence usually represented by a chamber or, if the ovary is 1-chambered, by a valve; the number of carpels within an ovary is often represented by the number of stigmas or placentae.

Carpophore, see Umbelliferae.

Caruncle, excrescence or appendage at or about the hilum of certain seeds.

Caryopsis, the fruit of grasses, similar to an achene but with the seed completely joined to the ovary wall, as in a wheat grain.

Castaneous, chestnut- or red-brown colored.

Catkin, a slender pendulous spike formed of often incomplete and unisexual very simple flowers.

Caudate, having a slender tail-like appendage.

Caudex, the perennial usually woody base of an otherwise herbaceous plant.

Caulescent, having a manifest aerial stem; typical of most plants.

Cauline, used of leaves which are arranged along the stem, as contrasted with basal.

Chaff, thin dry scales or bracts resembling wheat chaff. Chaffy, of the texture of chaff.

Channelled, grooved like a gutter or trough.

Chaparral, the xerophytic type of colony of usually small-leaved thorny and rigid shrubs growing on drier mountain slopes.

Chartaceous, having texture of paper or parchment.

Chlorophyll, the green coloring matter of plants.

Ciliate, furnished with hairs on the margin as in an eye-lash. Ciliolate, minutely ciliate.

Cinereous, gray, the color of ashes.

Circumscissile, dehiscent in a circular fashion, the top falling away like a lid.

Clavate, club-shaped.

Claw, the attenuate base of some petals, particularly in the Cruciferae.

l.c. Cleft, cut deeply or about half way to the midvein.

Cleistogamous, spoken of flowers which are fertilized in the bud and do not open thereafter, often with incompletely developed perianth.

Coalescent, united; grown together.

Coetaneous, simultaneous with.

Column, the more or less prominent projection within an orchid flower which bears the stigma and anther.

Coma, tuft of hairs on apex of seed. Comose, with a coma.

Compressed, flattened.

Concave, with the surface curved in.

Confluent, blending or merging together.

Coniferous, bearing cones.

Connective, the portion of a stamen which connects the two chambers of the anther.

Connivent, converging, as football players in a huddle.

Convex, with the surface curved outward.

Cordate, heart shaped.

Corm, a shortened stem similar to a bulb but without fleshy storage leaves, as in a Gladiolus.

Corolla, the second or inner series of floral parts, usually colored.

Corymb, an inflorescence which is flat topped or convex, but in which the

component branches are unequal in length, arising from successively lower axils. Corymbose, arranged in a corymb.

Costate, ribbed.

Cotyledons, the first leaves formed by an embryo, serving usually as food reservoirs during the germination of the seed and early growth of the seedling; one in monocotyledons; two in dicotyledons; two or more, often indefinite in the gymnosperms.

Crenate, toothed with rounded teeth. Crenulate, minutely crenate.

Crested, bearing a ridge or erect appendage.

Culm, the term applied to the stems of grasses and sedges.

Cuneate, wedge-shaped.

Cuspidate, tipped with a cusp or sharp point.

Cyme, an inflorescence in which the stem is terminated by a flower, each successive flower arising from a lateral bud below the first to appear. Cymose, arranged in cymes.

Deciduous, falling away, as of leaves or bracts.

Decumbent, reclining with the tips ascending.

Decurrent, running down along.

Deflexed, bent abruptly downwards.

Dehiscent, opening to permit egress of contents, as in anthers and capsules.

Deltoid, triangular, the apex upward; like the Greek letter delta.

Dentate, toothed, usually with triangular teeth pointing outwards. Denticulate, finely dentate.

Depressed, flattened from above.

Dichotomous, forking regularly.

l.c. Diffuse, loosely spreading; the opposite of compact.

Dioecious, having the sexes on separate plants.

Disk, a fleshy platform-like outgrowth within the calyx at the base of the pistil upon which the stamens are frequently seated; spoken collectively

of the tubular flowers of the compositae as contrasted with the ray flowers. Discoid, said of heads of rayless Compositae.

Dissected, divided into numerous segments.

Distinct, separate; clearly seen.

Divaricate, widely divergent.

Dorsal, pertaining to the back, in axils, the side away from the main stem.

Drupe, a simple fleshy fruit with fleshy outer portion and a stony hard inner portion surrounding the seed. Drupelet, a small drupe; spoken of the units of an aggregate fruit, as in the blackberry.

Elliptical, narrowly oval, usually with acute ends.

Emarginate, notched at the apex.

Emersed, lifted out of water.

Entire, even, without lobes or teeth.

Epigynous, seated upon the summit of the ovary.

Erose or eroded, irregularly margined as if gnawed. Erosulate, finely erose.

Exserted, projecting from; as of stamens projecting from the corolla.

Extrorse, facing outward.

Fascicle, a cluster or bundle as of a bundle of twigs.

Fertile, capable of bearing seeds or spores.

Fibril, a slender fibre.

Filament, the stalk of a stamen, which bears the anther. Filamentous, formed of threads. Filiform, thread-like.

Fistulous, hollow and herbaceous, as of stems.

l.c. Flexuous, Zig-zag or undulating in outline.

Floret, the name applied especially to grass flowers; a small flower, usually one of a cluster.

Foliaceous, with the texture of green leaves. Foliar, similar to or pertaining to leaves. Foliate, with separate leaflets.

Follicle, a dry fruit formed of a single carpel dehiscing by a single suture.

Fovea, depression in leaf containing sporangium in Isoetes.

Free, not adnate or joined.

Frond, the term applied to fern leaves, and to the plant body in Lemnaceae.

Fuscous, grayish-brown.

Galea, the upper lip of the corolla, particularly in certain Scrophulariaceae, which is shaped like a broad, sometimes elongate, hood. Galeate, having a galea.

Geniculate, bent abruptly like a knee.

Glabrate, smooth, nearly without hairs, or becoming so in age. Glabrous, entirely devoid of hairs.

Gland, a cell or group of cells, often hairlike, which secrete various substances; often recognized by the secretions. Glandular, provided with glands.

Glaucous, bearing a white waxy bloom as in certain plums.

Globose, nearly or quite spherical.

Glomerule, a rather dense cluster of flowers usually cymose.

Glume, the chaffy or membranous bracts subtending the spikelets of grasses and sedges.

Gregarious, growing in colonies.

Gynoecium, the pistil or pistils as a whole.

Habit, the aspect and manner of growth of a plant.

Habitat, the situation in which a plant normally grows.

Hastate, shaped like a blade of a halberd: more or less bluntly arrow-shaped with the basal lobes flaring or spreading.

Head, a dense cluster of sessile or nearly sessile flowers; particularly the inflorescence of the Compositae.

Herb, plants usually small, not woody or only so at the very base; annual or if perennial, the aerial parts commonly annual. Herbaceous, like an herb, i.e. not shrubby or treelike.

Hirsute, clothed with straight but not rigid hairs, usually more or less appressed. Hirtellous, minutely hirsute.

Hispid, clothed with straight stiffish hairs usually bristly to the touch. Hispidulous, minutely hispid.

Hoary, gray with fine hairs.

Hyaline, thin and transluscent, as of onion-skin.

Hybrid, a cross between two species.

Hypanthium, structure resulting from the fusion of calyx tube and ovary wall in perigynous or epigynous flowers.

Hypogeous, below the earth; of cleistogamous flowers which bloom below ground level.

Hypogynous, inserted below the pistil, and free from it.

Imbricate, overlapping, as in shingles or tiles.

Immersed, growing wholly in and under water.

Imperfect, spoken of flowers which lack either stamens or pistils.

Incised, cut sharply and deeply.

Included, not at all protruding.

Indehiscent, not splitting open.

Inferior, that which is lower; spoken of ovaries to designate those which are partly or wholly joined to the calyx.

Inflated, as though blown-up; bladder-like.

Inflorescence, the flower-cluster of a plant.

Innovation, a basal shoot of a perennial grass.

Inserted, attached to or growing out of.

Internode, the portion of the stem between two nodes.

Interval, the space between two ridges or ribs.

Introrse, facing inwards.

Involucel, an involucre of second order.

Involucre, a whorl of bracts subtending a flower cluster.

Irregular, said of flowers in which the members of a series are unlike in size or shape.

Keel, a ridge similar to the keel of a boat; the two lower petals of the flower of certain Leguminosae.

Lacerate, irregularly margined as though torn.

Laciniate, slashed; cut into narrow pointed lobes.

Lanate, clothed with soft tangled hairs like wool.

Lanceolate, lance-shaped, i.e., narrowly tapering to a point as in a penholder or broader.

Lateral, pertaining to one side.

Lax, loose.

Leaflet, a subdivision of a compound leaf, as in the rose.

Lemma, the outer bract subtending a grass flower.

Lenticular, lens-shaped, i.e., flattened but convex on both surfaces.

Lepidote, having small scurfy scales.

Ligule, the strap-shaped corollas of certain Compositae; a thin hyaline projection in grass leaves where the blade departs from the stem.

Ligulate, bearing a ligule.

Limb, the expanded portion of a corolla, as contrasted with the tube.

Linear, elongate with more or less parallel margins.

Lip, one of the two principal lobes of certain tubular corollas as in the snapdragon or applied similarly to the calyx as in Lupines; the lower usually dissimilar petal of an orchid flower.

Loculicidal, a type of dehiscence in which each chamber of a capsule is opened by a longitudinal median split; contrasted with septicidal.

Lodicules, minute hyaline scales found within a grass flower at the base of the stamens.

Lunate, crescent-shaped.

Lyrate, said of leaves which are pinnatifid, the terminal lobe being prominently larger than the remainder.

Megaspore, the larger spore of plants having spores of two sizes. See e. g., Isoetes.

Membranous, thin and soft and more or less translucent like an animal membrane; said also of leaves which are thin and soft.

Microspore, the smaller spore of plants having spores of two sizes.

Moniliform, resembling a string of beads.

Monadelphous, of stamens united by their filaments into a column.

Monoecious, bearing stamens and pistils in separate flowers but on the same plant.

Mucro, an abrupt small tip. Mucronate, bearing a mucro.

Muricate, roughened by minute sharp processes.

Nectary, a place or organ where nectar is secreted.

Node, a point upon the stem at which a leaf or leaves originate.

Nut, an indehiscent 1-seeded fruit with a bony or hard endocarp usually developing from a compound ovary as in the walnut. Nutlet, a small nut; the name applied to the subdivisions of the mature ovaries of the Labiatae and Boraginaceae.

Ob-, a prefix signifying inversion as in the following terms:

Obcordate, cordate with the point directed to the base.

Oblanceolate, inverse of lanceolate.

Oblong, longer than broad, with the sides approximately parallel or lightly rounded, usually with blunt or rounded ends.

Obovate, inversely ovate.

Obsolete, rudimentary or not evident.

Obtuse, blunt.

Ocrea, a sheathing stipule as in Polygonum.

Offset, a short branch next the ground which takes root, thus propagating the plant.

Opaque, not transparent.

Orbicular, more or less circular in outline.

Oval, the shape of a race-track, i.e., a flattened circle.

Ovary, that portion of the pistil which forms and contains the ovules and ultimately ripens to form the fruit.

Ovoid, shaped like a hen's egg.

Ovate, in outline like a hen's egg.

Ovule, a reproductive body formed within the pistil which after fertilization and development, becomes the seed containing an embryonic plant.

Palea, palet, the inner bract subtending a grass flower, usually thinner and more hyaline than the lemma.

Pallid, pale.

Palmate, diverging radially like the fingers from the palm.

Panicle, a branching inflorescence formed of several racemes or similar inflorescences. Paniculate, arranged in panicles.

Papilose, bearing minute nipple-shaped projections.

Pappus, the calyx-limb of the flowers of Compositae variously modified, either bristle-like or chaffy or nearly wanting, forming a small ridge at the apex of the ovary and achene.

Parasitic, growing upon and deriving nourishment at least in part, from another plant.

Parietal, pertaining to the wall or side of a capsule.

Parted, in parts or cut nearly but not quite to the base.

Pectinate, pinnatifid with closely set segments; comb-like.

Pedicel, the stalk of a single flower. Pedicillate, having a pedicel.

Peduncle, the stalk of an inflorescence; also used of a single flower when that is solitary.

Peltate, shield-like, fastened on the underside as a shield to an arm.

Perennial, enduring from year to year for an indefinite period.

Perfect, spoken of flowers which have both stamens and pistils.

Perianth, the floral envelope, composed either of well defined calyx and corolla or more commonly used when these are similar and not readily distinguished, as in the lily.

Pericarp, the matured ovary wall, hence the wall of a fruit.

Perigynium, a sac-like or flask-shaped organ which encloses each pistillate flower (and achene) of Carex, through the oriface of which the style projects.

Perigynous, seated around the ovary; said of stamens.

Persistent, used as the opposite of caducous or deciduous; continuing attached for a long period of time.

Personate, tubular corolla with a palate closing its throat.

Petal, one of the leaves of a corolla. Petaloid, petal-like.

Petiole, the leaf stalk. Petiolate, having a petiole.

Petiolule, the stalk of a leaflet. Petiolulate, having a petiolule.

Pilose, hairy with soft, usually long straight hairs.

Pinna, primary division of a compound frond. Pinnule, secondary division of a frond twice or more compound.

Pinnate, resembling a feather; used of leaf-venation in which lateral veins arise at intervals from a principal mid-vein or of compound leaves in which the leaflets are arranged on both sides of a common median rib, as in the Rose. Pinnatifid, used of leaves pinnately lobed or cut but still not compound.

Pinnatisect, pinnately dissected.

Pistil, the central female organ of a flower in which the ovules (and eventually the seeds) are formed. Pistillate, used of flowers having pistil but no stamens.

Placenta, a surface bearing ovules.

Plane, flat, not curved.

Plicate, folded as in a fan.

Plumose, having fine soft hairs arranged as in a feather.

Pod, a dry dehiscent fruit.

Pollinia, the waxy pollen-masses found in the orchid and milkweed families.

Polygamous, bearing both perfect and imperfect flowers.

Pome, the fleshy fruit of certain Rosaceae, as in the apple and pear.

Poricidal, opening by means of pores.

Posterior, rear; the side toward the axis.

Prickles, spine-like projections of the bark which separate with it, as in the Rose.

Procumbent, trailing along the ground and rising at the tip, but not rooting nodes.

Prostrate, flat upon the ground.

Puberulent, minutely pubescent.

Punctate, dotted.

Pungent, sharply and rigidly pointed; fragrant with a penetrating odor.

Raceme, a more or less elongated unbranched inflorescence of the indeterminate type, i.e., tipped not by a flower but by a growing point, each flower being stalked, the youngest flower being nearest the apex. Racemose, in racemes.

Rachilla, axis of a spikelet on which florets are borne.

Rachis, axis of a spike or raceme; midrib of a compound leaf or frond; in Gramineae the main axis and branches of an inflorescence on which spikelets are borne.

Radiate, spreading from a common center; bearing ray-flowers (in Compositae).

Radical, pertaining to the root or coming from the base.

Ray, one of the peduncles or pedicels of an umbel; the strap-shaped marginal flowers of the Compositae.

Receptacle, the apex of the stalk which bears the flower parts; in the Compositae also applied to the disk bearing the flowers.

Recurved, curved backwards.

Reflexed, bent backwards or downwards rather abruptly.

Regular, said of flowers which have the members of each whorl similar in size and shape.

Reniform, shaped like a kidney or kidney-bean.

Reticulate, in the form of a network.

Retrorse, directed downwards.

Retuse, with a shallow notch at the apex.

Revolute, rolled backwards.

Rhombic, Rhomboidal, diamond-shaped.

Rootstock, a horizontal usually subterranean stem.

Rostrate, beaked.

Rotate, wheel-shaped, i.e., flat and circular.

Rotund, rounded or circular in outline.

Rudimentary, imperfectly or incompletely developed.

Rugose, wrinkled.

Runner, a stolon.

Saccate, like a sac or pouch.

Sagittate, like an arrow-head, the lobes projecting downward, not flaring.

Samara, an indehiscent winged fruit as in the maple.

Saprophyte, a plant without chlorophyll which grows on dead organic matter.

Scabrous, rough.

Scale, a small rudimentary leaf suggesting a fish-scale; used in Carex to designate the bracts subtending each flower.

Scape, a naked or nearly naked peduncle, usually thought of as arising from a basal tuft of leaves. Scapose, scape-like.

Scarious, thin and translucent, usually dry like tissue paper.

Scorpioid, coiled and unrolling like a fiddle-neck.

Secund, borne along one side of an axis or apparently so.

Seed, the ripened ovule consisting of the embryo and its proper coats.

Sepal, one of the leaves of the calyx.

Septate, divided by cross partitions (septa).

Septicidal, the type of dehiscence in which the chambers of a capsule are split apart but are themselves not necessarily split open; opposed to loculicidal.

Septum, a partition.

Sericeous, silky or satiny.

Serrate, toothed like a saw, the teeth leaning forward. Serrulate, finely serrate.

Sessile, without a stalk.

Seta, a hair-like bristle. Setose, bristly.

Sheath, a tubular sheathing envelope as in the basal portion of a grass leaf.

Shrub, a woody plant of perennial habit but smaller than a tree and commonly with several stems.

Silicle, a short pod of Cruciferae.

Silique, the usual pod of Cruciferae.

Simple, of one piece, not compound.

Sinuate, wavy.

Sinus, the recess between two lobes, literally a bay.

Sorus, cluster of sporangia in Polypodiaceae.

Spadix, a fleshy spike as in the Calla Lily.

inflorescence distant and divisions pedicellate.

Spicate, arranged as a spike.

Spiciform, upper part of inflorescence spikelike in outline, lowermost branches of

Spike, a dense cylindrical inflorescence of sessile or nearly sessile flowers.

Spikelet, a small spike; especially the flower clusters of grasses and sedges.

Spine, a sharp, more or less woody outgrowth of the stem; a thorn.

Spinose, covered with spines or similar processes.

Spore, an asexual reproductive cell performing in ferns somewhat the function of a seed, but without an embryo.

Sporophyll, a spor(e)-bearing leaf as contrasted with a sterile leaf.

Spur, a projection downward or backward from the calyx or corolla as in the Larkspur or Violet.

Stamen, the male organ of a flower which bears the pollen. Staminate, used of flowers having stamens but no pistils. Staminodium, a sterile stamen or organ similar in position to a stamen.

Stellate, star-like; radiately branched hairs.

Sterile, failing to bear or incapable of bearing spores or seeds.

Stigma, the receptive part of the pistil at which pollination actually occurs,

often sticky or otherwise marked.

Stipe, the leaf-stalk of a fern; more generally, a stalk.

Stipules, appendages on either side of the petiole base of certain leaves as in the rose.

Stolon, a basal branch rooting at the nodes; a runner as in the strawberry.

Striate, marked with slender longitudinal lines.

Strict, very straight and upright.

Strigose, hairy with stiff appressed hairs.

Style, the usually attenuated part of a pistil which bears the stigma or stigmas.

Stylopodium, see fam. desc. Umbelliferae.

Sub-, a prefix signifying inferior rank or position; also signifying almost, approximately or somewhat.

Subulate, awl-shaped.

Succulent, fleshy and juicy.

Suffrutescent, subshrubby or woody at the base, herbaceous above.

Superior, said of ovaries which are wholly unattached to the calyx.

Suture, the line along which a split occurs as in a capsule.

Symmetrical, applied to flowers in which the different series have parts of equal number.

Taproot, a stout vertical root as in a carrot, as contrasted with the numerous fibrous roots of grasses.

Terete, columnar; circular in cross-section.

Ternate, disposed in parts of 3 or 3 nearly equal divisions.

Testa, seed-coat.

Throat, the orifice of a tubular flower or corolla.

Tomentose, hairy with curled more or less matted hairs (tomentum) as in upholstery.

Triternate, thrice ternate.

Truncate, ending abruptly as though sheared off.

Tuber, a thickened subterranean stem or branch which lies horizontally, as a potato.

Turgid, plump, as though distended with water.

Turion, a scaly shoot from a subterranean bud; sterile vegetative shoot (in Rubus.

Umbel, an inflorescence of which the component branches (rays) are approximately equal, resembling the ribs of an umbrella. Umbellate, in an umbel. Umbellet, an umbel of secondary order.

Uniserial, in a single row.

Unisexual, used of flowers having either stamens or pistils but not both.

Utricle, a one-seeded more or less inflated fruit with thin walls.

Valvate, meeting by the margins but not overlapping.

Valve, one of the component parts of the wall of a dehiscent fruit.

Velum, membranous margin of fovea in Isoetes.

Venose, veins prominent.

Ventral, pertaining to the lower side; in an axil the side next the main stem.

Versatile, said of centrally fixed anthers which readily turn upon the filament in any direction.

Verticillate, whorled.

Villous, with long and soft straight hairs.

Virgate, straight and slender like a sapling; wand-like.

Viscid, sticky.

Whorl, a group of three or more leaves arising at a single node.

Wing, a membranous projection as along an angled stem; the lateral petals of certain flowers of the Leguminosae.

Woolly, clothed with long soft tangled hairs.

Zygomorphic, applied to flowers which may be divided into two similar halves by one plane only, as a sweet pea.

Set in 3 columns

Abies
Absinthe
Acer
Aceraceae
Achillea
Aconite
Aconitum
Acorus
Actaea
Adder's tongue Family
Adenocaulon
Adiantum
Agastache
Agoseris
Agropyron
Agrostemma
Agrostis
Aira
Aizoaceae
Alder
Alfalfa
Alisma
Alismaceae
Allium
Alnus
Alopecurus
Alpine Sorrel
Alsine
Alsinopsis
Alum root
Amaranthaceae
Amaranthus
Ambrosia
Ambrosiae
Amelanchier
Amesia
Amsinckia
Anacardiaceae
Anacharis
Anagallis
Anaphalis
Anemone
Andromeda
Andropogon
Angelica
Antennaria
Anthemideae
Anthemis
Antiphylla
Aphyllon
Aplopappus
Apocynaceae
Apocynum
Aquilegia
Arabis
Araceae
Aralia
Araliaceae

Arbor-vitae
Arceuthobium
Arctium
Arctostaphylos
Arenaria
Argentina
Aristolochiaceae
Armeria
Arnica
Arrow grass Family
Arrowhead
Artemesia
Arum Family
Asarum
Asclepiadaceae
Asclepias
Ash
Mountain
Aspen
Aster
Golden
Astereae
Astragalus
Atragene
Atriplex
Athyrium
Athysanus
Avens
Water
Whiskered
Awlwort
Babies breath
Bachelor's Button
Balsam-root
Balsaminaceae
Balsamorhiza
Baneberry
Barberry Family
Barley, wild
Bassia
Bearberry
Beardgrass
Beard-tongue
Bear grass
Beckmannia
Bedstraw
Beech Fern
Bellflower Family
Bentgrass
Berberidaceae
Berberis
Besseya
Betula
Betulaceae
Bicuculla
Bidens
Bilberry
Bog
Dwarf
Bindweed
Birch

Clump

Spring

Birch Family

Birthwort Family

Biscuit root

Blackberry

Blackcap

Black-eyed Susan

Bladderpod

Double

Bladderwort Family

Blitum

Bluebells

Blueberry

Blue curls

Blue flax

Blue-eyed grass

Blue grass

Bog rosemary

Bog rush

Boisduvalia

Borage Family

Boraginaceae

Botrychium

Boykinia

Bracken

Brasenia

Brassica

Brickellia

Brodiaea

Brome grass

Bromus

Broom-rape Family

Buckbean Family

Buck brush

Buckthorn Family

Buckwheat Family

Buffalo Berry

Bugbane Family

Bugseed

Bull thistle

Bulrush

Bunchberry

Bunchgrass

Burdock

Bur-reed Family

Bursa

Butter and eggs

Buttercup Family

Calamagrostis

Calamus

Callitrichaceae

Callitriche

Calochortus

Caltha

Calypso

Camas

Camassia

Camelina
Campanula
Campanulaceae
Campion
  Bladder
  Moss
  White
Canada blue-grass
Canada thistle
Canary Grass
Cancer-root
Capparidaceae
Caper Family
Caprifoliaceae
Capnoides
Capsella
Cardamine
Carex
Carpet-weed
  Family
Carum
Caryophyllaceae
Cascara sagrada
Cassiope
Castalia
Castilleia
Catchfly
  Night-flowering
Catnip
Cat-tail
  Family
Cat's breeches
  Ear
Ceanothus
Cedar
  Ground
  Western Red
Celastraceae
Centaurea
Centunculus
Cephalanthera
Cerastium
Ceratophyllum
Ceratophyllaceae
Chaenactis
Chaetochloa
Chaffweed
Chamaenerion
Chamomile
  Corn
  Wild
Cheat
  Soft
Checker Lily
Cheeses
Cheilanthes
Cheiranthus

Cheirinia
Chenopodiaceae
Chenopodium
Cherry
Chess
Chickweed
  Common
  Water
Chicory
Chimaphila
Chiming Bells
Chiogenes
Chionophila
Chives, Wild
Chokecherry
Chrysanthemum
Chrysocoptis
Cicely, Sweet
Cichoriaceae
Cichorium
Cicuta
Cinna
Cinquefoil
  Marsh
  Shrubby
Circaea
Cirsium
Clarkia
Claytonia
Cleavers
Clematis
  Blue
  White
Cleome
Clintonia
Clover
  Alsike
  Low Hop
  Owl's
  Red
  Stinking
  Sweet
  White
Club-moss Family
Cocklebur
Cogswellia
Collinsia
Collomia
Coltsfoot
Columbine
Columbo
Comandra
Compositae
Convolulaceae
Convolulus
Coptis
Coral Root
Corollorhiza
Cord grass
Coreopsis

Coriospermum
Corn Cockle
Cornaceae
Cornel, Dwarf
Corn flower
Cornus
Corydalis
Corylaceae
Corylus
Cottonwood
Cous
Cow Parsnip
Cow Wheat
Cranberry, Small
Cranebill
Crassulaceae
Crataegus
Cream bush
Cress, Hoary
Crowfoot
White Water
Yellow Water
Cruciferae
Crunocallis
Cryptantha
Cupressaceae
Currant
Black
Garden
Golden flowering
Maple-leaved
Prickly
Squaw
Sticky
Wild Black
Wild Red
Cryptogramma
Cudweed
Curly Dock
Currant
Cyanosurus
Cynareae
Cyperus
Cyperaceae
Cypress Spurge
Cypripedium
Cystopteris
Cytherea
Dactylis
Daisy, Ox-eye
Dandelion
Danthonia
Dasiphora
Dasystephana
Dead Nettle
Delphinium
Deschampsia
Descurainia
Devil's Club
Dicentra
Dichelostemma
Dipsacus
Dipsaceae

Disporum
Distegia
Dock
Curly
Dodecatheon
Dogbane Family
Dog fennel
Dogwood
Family
Downingia
Draba
Dracocephalum
Drosera
Droseraceae
Dryas
Drymocallis
Dryopteris
Duckweed
Family
Greater
Ivy-leaved
Lesser
Dulichium
Dutchman's breeches
Eburophyton
Echinocloa
Echinopanax
Elderberry
Black
Blue
Eleagnaceae
Eleocharis
Elodea
Elymus
Epilobium
Epipactis
Equisetaceae
Equisetum
Eragrostis
Ericaceae
Erigeron
Eriogonum
Eriophorum
Eriophyllum
Erodium
Eryngium
Erysimum
Erythrocoma
Erythronium
Euphorbia
Euphorbiaceae
Evening Primrose
Family
Everlasting
Fairy Bells
False
Bugbane
Hellebore
Huckleberry
Felwort

Fescue
Meadow
Red
Festuca
Figwort
Family
Filaree
Filix
Fir
Alpine
Douglas
White
Fireweed
Flag
Sweet
Flax
Blue
Family
Forget-me-not
Foxtail
Green
Little meadow
Fragaria
Frasera
Fringe-cups
Fritillaria
Fritillary
Frogbit
Family
Fumariaceae
Fumitory
Family
Gaillardia
Galium
Gaultheria
Gayophytum
Gentian
Gentiana
Gentianaceae
Geraniaceae
Geranium
Geum
Ghost flower
Giant Helleborine
Gilia
Scarlet
Ginger, Wild
Ginseng
Globe flower
Globe Mallow
Glyceria
Glycyrrhiza
Gnaphalium
Goat brush
Goldenrod
Goldthread
Goodyera
Gooseberry
Snake River
White stemmed

Goosefoot

Family

Green
Gramineae
Grape

Fern

Oregon

Grass

Alaska onion

Annual blue

Arrow-

Barnyard

Beard

Bent

Blue

Blue bunch

Bluejoint

Brome

Buffalo bunch

Canada blue

Cheat

Chess

Common brome

Cord

Cotton

Downy brome

English rye

Family

Fowl manna

Fowl meadow

Green foxtail

Hair

Hungarian brome

Italian ryegrass

Kentucky blue

Manna

Meadow fescue

Mountain bunch

Mountain hair

Mountain rice

Mountain timothy

Northern manna

Oat

Onion

Orchard

Parnassus, of

Pepper

Perennial ryegrass

Pine

Prairie cord

Purple-eyed

Quack

Quaking brome

Rattlesnake

Red fescue

Reed

Reed canary

Ripgut

Rough hair

Ryegrass
Slough
Smooth brome
Soft cheat
Squirrel tail
Stink
Sweet reed
Tickle
Timothy
Tufted manna
Western witch
Wheat
Wild barley
Gratiola
Green bog orchid
Grindelia
Grossularia
Grossulariaceae
Ground Ivy
Grouse berry
Gumweed
Gymnospermae
Habenaria
Hairgrass
Halerpestes
Halorragidaceae
Haplopappus (see Aplopappus)
Hawkweed
Hawthorne
Hazelnut
California
Family
Heather
Purple
White
Yellow
Hedge mustard
Hedge nettle
Heath
Family
Hedysarum
Heleniae
Helenium
Helianthеae
Helianthella
Helianthus
Hellebore, false
Helonias
Hemieva
Hemlock
Coast
Mountain
Water
Hemp
Indian
Mountain
Heracleum
Hesperis
Hesperochiron
Hesperocordum
Heterisia
Heterocodon
Heuchera

Hieracium
Hippurus
Holodiscus
Homalobus
Honeysuckle
Hookera
Hordeum
Horehound
  Water
Horkelia
Hornwort
Hosackia
Horsemint
Horsetail
  Family
Howellia
Huckleberry
Hungarian brome
Hyacinth, Wild
Hydrangeaceae
Hydrangea Family
Hydrocharitaceae
Hydrophyllaceae
Hydrophyllum
Hypericaceae
Hypericum
Hyssop
  Wild
Ibidium
Impatiens
Indian
  Hemp
  Paintbrush
  Pink
  Thistle
Inuleae
Iridaceae
Iris
  Family
Isoetaceae
Isoetes
Itchweed
Ivesia
Jacob's Ladder
Jerusalen oak
Jewelweed
  Family
Juncaceae
Juncoides
Juncus
Juniper
  Dwarf
  Rock
Juniperus
Jussieua
Kalmia
Knotweed
Koeleria
Kruhsea
Labiatae
Labrador tea

Lace
Fern
Pod
Lactuca
Ladies tresses
Lady's slipper
Lagophylla
Lamb's quarters
Lamium
Lappula
Larch
Alpine
Larix
Larkspur
Lathyrus
Laurel
Sticky
Leather flower
Ledum
Leguminosae
Leibergia
Lemna
Lemnaceae
Lentibulariaceae
Leontodon
Lepargyr
Lepidium
Leptarrhena
Leptasea
Leptptaenia
Lettuce
Miner's
Prickly
Leucocraspedum
Licorice
Ligusticum
Liliaceae
Lilium
Lily
Checker
Pond
Tiger
Toad
Limosella
Limnia
Limnorchis
Linaceae
Linanthastrum
Linanthus
Linaria
Linnaea
Linum
Listera
Lithophragma
Lithospermum
Loasa
Family
Loasaceae
Lobeliaceae
Lolium
Lomatium
Loosestrife
Family

Lotus
Lousewort
Luetka
Lupine
Lupinus
Luzula
Lycnis
Lycopodium
Lycopus
Lysichitum
Lysias
Lysiella
Lysimachia
Lythraceae
Madder
Family
Madia
Madiae
Madronella
Mahonia
Maianthemum
Mallow
Globe
Family
Malva
Malvaceae
Manna grass
Fowl
Northern
Water
Maple
Family
Mountain
Mares tail
Mariposa lily
Marrubium
Marsh Marigold
Marsilea
Marsiliaceae
Matricaria
Meadow fescue
Meadow grass, Fowl
Meadow rue
Meadow-sweet
Medicago
Medick
Melampyrum
Melica
Mililotus
Mentha
Mentzelia
Menyanthaceae
Menyanthes
Menziesia
Mertensia
Micranthes
Micromeria
Microseris
Microsteris
Milfoil
Water

Milkweed
Family
Narrow-leaved
Showy
Mimulus
Miner's lettuce
Mint
Family
Mistletoe
Family
Mitella
Miltellastra
Mitrewort
Moehringia
Moldavica
Mollugo
Mock Orange
Monarda
Monardella
Moneses
Monkey flower
Monkshood
Monocotyledones
Monolepis
Monotropa
Montia
Montiastrum
Morning glory Family
Mountain
Ash
Bunchgrass
Hairgrass
Hemp
Lover
Timothy
Muhlenbergia
Mullein
Muscaria
Mustard
Black
Family
Tower
Tumbling
Wormseed
Yellow
Myosotis
Myriophyllum
Myzorrhiza
Nyadaceae
Naias
Naiocrene
Nasturtium
Naumbergia
Navarretia
Nemophila
Nepeta
Nettle
Dead
Family
Hedge
Niggerheads
Nightshade

Enchanter's
Ninebark
Northern manna grass
Nuphar
Nymphaea
Nymphaeaceae
Oat, Wild
Oat-grass
Tall
Timber
Odostemon
Oenothera
Oleaster family
Olsynium
Onagraceae
Onion
Ophioglossaceae
Ophioglossum
Ophyrs
Oplopanax
Opulaster
Orchard grass
Orchidaceae
Orchid
Bog
Family
Green bog
Phantom
Rein
White bog
Stream
Orchis, stream
Oregon grape
Orobanchaceae
Orobanche
Orthocarpus
Oryzopsis
Osmorrhiza
Owl's clover
Oxycoccus
Oxyria
Ozomelis
Pachistima
Panicularia
Panicum
Parietaria
Parnassia
Parsnip
Cow
Family
Water
Partridge Foot
Pastinaca
Pea
Family
Golden
Sweet
Wild sweet
Pectianthia
Pedicularis
Pellaea
Pellitory

Penny cress

Pennyroyal

Western

Penstemon

Penstemonopsis

Peppergrass

Peppermint

Peramium

Peritonum

Petasites

Peucedanum

Phaea

Phacelia

Family

Phalaris

Phantom orchid

Phegopteris

Phelipaea

Phleum

Phlox

False

Family

Phragmites

Phyllodoce

Phymosia

Physaria

Physocarpus

Physostegia

Picea
Pigweed
Pimpernel
Pinaceae
Pine
  Drops
  Family
  Lodgepole
  Princes
  Western White
  Western Yellow
  White
  White-bark
  Yellow
Pinegrass
Pinesap
Pink
  Cow
  Family
  Menzies
  Scouler's
Piperia
Pipsissewa
Plagiobothrys
Plantain
  Water
Platanthera
Plectritis
Poa
Poaceae
Poison
  Ivy
  Oak
Polemoniaceae
Polemoniella
Polemonium
Polyganaceae
Polygonum
Polypodiaceae
Polypodium
Polypogon
Polystichum
Pond Lily
Pondweed
  Horned
Popcorn flower
Poplar
Portulaca
Portulaceae
Potamogeton
Potamogetonaceae
Potato Family
Potentilla
Poterium
Powderhorn
Prenanthes
Primulaceae
Primrose
  Evening
  Family

Princes Pine
Prunella
Prunus
Pseudotsuga
Psilocarphus
Pteridium
Pteridophyta
Pteris
Pterospora
Puccoon
Pulsatilla
Purple Flag
Purslane
Family
Pyrola
Pyrolaceae
Pyrrocoma
Pyrus
Quackgrass
Quaking Bromegrass
Quamasia
Queen cup
Quillwort
Radicula
Radish
Ragweed
Ranunculaceae
Rancunculus
Raphanus
Raspberry
Rattlesnake Grass
Rattlesnake Plantain
Razoumofskya
Red Fescue
Red-top
Reed
Canary grass
Grass
Rein Orchis
Rhamnaceae
Rhamnus
Rhodiola
Rhododendron
Rhus
Rhynchospora
Ribes
Rice
Mountain
Ripgut Grass
Rosaceae
Rose
Family
Root
Rosemary
Rotala
Rough Hairgrass
Rubiaceae
Rubus
Rudbeckia
Rue
Meadow

Rumex
Rush
  Bog
  Family
  Northern Tundra
  Southern Tundra
  Spike
  Toad
Russian Thistle
Rye, Wild
Rynchospora
Sagebrush
Sagittaria
St. John's Wort
  Family
Salicaceae
Salix
Salmon Berry
Salsify
Salsola
Sambucus
Sandalwood Family
Sandwort
Sanicle
Sanguisorba
Sanicula
Santalaceae
Sarsaparilla
  Wild
Satureia
Saussurea
Saxifraga
Saxifragaceae
Saxifrage
  Family
Scheuchzeria
Scheuchzeriaceae
Scirpus
Scrophularia
Scrophulariaceae
Scutellaria
Sedge
  Family
Sedum
Selaginella
Selaginellaceae
Self-heal
Senecio
Senecioneae
Septarrhena
Serapias
Sericotheca
Service Berry
Setaria
Sheep sorrel
Shepherdia
Shepherd's Purse
Shooting Star
Sibbaldia
Sidalcea
Sieversia
Silene

Silverweed
Sisymbrium
Sisyrinchium
Sium
Skullcap
Skunkcabbage
Western
Skunkweed
Sleepy Catchfly
Slim Solomon
Slough grass
Smartweed
Water
Smelowskia
Smilacina
Smooth Brome
Snappers
Sneezeweed
Snowberry
Solanaceae
Solanum
Solidago
Solium
Solomon's Seal, False
Soloman, Fat
Sonchus
Sorbus
Sorrel, Alpine
Sow Thistle
Sparganiaceae
Sparganium
Spartina
Spatularia
Spearmint
Specularia
Spergula
Spergularia
Spermatophyta
Sphaeralcea
Sphenopholis
Spiranthes
Spiraea
Spirodela
Sporobolus
Spring Beauty
Spruce
Engelmann
Spurge Family
Spurry
Corn
Sand
Squashberry
Squaw-root
Squirrel tail grass
Stachys
Stafftree Family
Star-flower
Star Tulip
Steironema
Stellaria
Stenanthella
Stenanthium
Stick Leaf
Stickseed

Stick Tight
Stickweed
Sticky Laurel
Stinkgrass
Stinking Clover
Stipa
Stonecrop
Family
Strawberry
Blite
Streptopus
Subularia
Suksdorfia
Sumac
Family
Sundew
Family
Narrow-leaved
Round-leaved
Sunflower
Family
Sweet Cicely
Sweet Flag
Sweet Reedgrass
Swertia
Symphoricarpos
Synthyris
Syringia
Tanacetum
Tansy
Mustard
Taraxacum
Taxaceae
Taxus
Tea, Labrador
Tea-vine
Teasel
Family
Tellima
Thalesia
Thalictrum
Thelypteris
Thermopsis
Therofon
Thimbleberry
Thirst Berry
Thistle
Bull
Canadian
Indian
Turkestan
Sow-thistle
Yellow-star
Thlaspi
Thuja
Thysanocarpus

Tiarella
Tickseed
Ticklegrass
Tiger Lily
Timothy
  Mountain
Tinker's Penny
Tissa
Toad Lily
Toad Rush
Tofieldia
Touch-me-not
Tower Mustard
Tragopogon
Trautvetteria
Trefoil
Trisetum
Trichostemma
Trientalis
Trifolium
Triglochin
Trillium
Trisetum
Triteleia
Trollius
Tsuga
Tufted Hairgrass
Tulip
  Mariposa
  Star
Tumbleweed
Tumbling Mustard
Turritis
Twayblade
Twin-berry
  Black
  Blue
  Red
Twin-flower
Twisted Stalk
Typha
Typhaceae
Umbelliferae
Umbrella plant
Urtica
Urticaceae
Utricularia
Vaccaria
Vaccinium
Vagnera
Valerian
Valeriana
Valerianaceae
Veratrum
Verbascum
Verbena

Family
Veronica
Vetch
Viburnum
Vicia
Viola
Violaceae
Violet
Family
Wake Robin
Wall flower
Washingtonia
Water
Horehound
Manna grass
Milfoil
Plantain Family
Waterleaf
Family
Waterlily
Family
Watershield
Water Starwort Family
Wheatgrass
Whitlow Grass
Willow
Family
Herb
Windflower
Wintercress
Wintergreen
Witchgrass
Woodland star
Wood Rush
Woodsia
Wokas
Wormseed Mustard
Wyethia
Xanthium
Xerophyllum
Xylostemon
Yarrow
Yellow Bell
Yellow Pea
Yew
Family
Zanichellia
~~Zannichelliaceae~~ →
Zigadenus
Zizia

#

Idaho

Minerals +

Index

etc